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REENGINEERING BEST VALUE SOURCE SELECTION THROUGH PROCESS INNOVATION AND THE SELECTED APPLICATION OF INFORMATION TECHNOLOGY

by

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The purpose of this thesis is to analyze the Best Value Source Selection process, identify process pathologies, and explore opportunities to dramatically improve performance utilizing information technology as an enabler of that innovation. The Davenport Process Innovation Framework is used to analyze the Best Value Source Selection process for innovation opportunities. A thorough review of the current Best Value Source Selection process within NAVFAC, Southwest Division is conducted, and pathologies and innovation opportunities are identified. The Knowledge-based Organizational Process Redesign tool is utilized to test various reengineered process models. Recommendations for Best Value Source Selection process innovation, and their application utilizing selected information technology enablers, are provided. Following Davenport's methodology, this thesis recommends process innovations that have the potential to dramatically improve the Best Value Source Selection process in terms of cost, quality, and speed. It serves as an example for other Navy and Department of Defense organizations seeking to implement information technology tools as enablers to improve their existing Best Value Source Selection procedures, as well as other types of procurement processes. In this period of shrinking financial, material, and human resources, this study proves invaluable for raising the productivity and quality of outputs of the Federal acquisition community.

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REENGINEERING BEST VALUE SOURCE SELECTION THROUGH PROCESS INNOVATION AND THE SELECTED APPLICATION OF INFORMATION TECHNOLOGY

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I. INTRODUCTION

A. PURPOSE

The purpose of this research is to analyze the Best Value Source Selection process, identify process pathologies, and explore opportunities to dramatically improve performance utilizing information technology (IT) as an enabler of that innovation. This thesis provides the necessary information required to recommend process innovations, through the implementation of selected information technology tools, which have the potential to dramatically improve the Best Value Source Selection process in terms of cost, quality, and speed. It will serve as an example for other Navy and Department of Defense (DoD) organizations seeking to implement information technology tools as enablers to improve their existing Best Value Source Selection procedures, as well as other types of procurement processes. In this period of shrinking financial, material, and human resources, this study may prove invaluable for raising the productivity and quality of outputs of the Federal acquisition community.

1. Historical Background

Since the end of the Cold War, the Department of Defense has been coping with reduced resources and a changing world. Over the past decade, the Department has been hit with many seemingly conflicting challenges. Domestically, the American public demands that government be more efficient and smaller, but seems unwilling to accept fewer or poorer services in return. The perception is that the Federal government can do ever more with fewer and fewer resources. As if to prove this point, Vice Present Al Gore initiated the National Performance Review to "make the entire Federal government both less expensive and more efficient, and to change the culture of our national bureaucracy away from complacency and entitlement and toward initiative and empowerment." (Gore, 1993)

Along with this trend to make government more efficient, the Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) have undergone major revisions recently, including the Federal Acquisition Streamlining

Act (FASA) and the more recent FAR 15 rewrite, which had a major, direct impact on source selection procedures. One of the primary goals of the regulatory revisions is an attempt to cause the Federal government to adopt a more business-like approach to acquisition by, among other things, making selections based on "best value" rather than "lowest bid." As a result, Best Value Source Selection procedures have become more commonly used in recent years, as procuring agencies take into account a proposer's past performance, experience, unique technical capabilities, key personnel, compliance with socio-economic goals, and other factors.

While it is arguable that negotiated procurements tend to provide better value products and services for the end user, they also take much more administrative effort than the previously more common Invitation for Bid (IFB). Ironically, just as the demands on the Federal acquisition professional's time began to increase due to new, other-than-low-bid procurement methods, the acquisition community was reduced drastically. From fiscal year (FY) 1993 through FY 1997, the DoD reduced the civilian and military personnel employed in acquisition organizations by 70,552 (approximately 24 percent) and 18,338 (approximately 28 percent), respectively. In fiscal years 1996 and 1997 alone, DoD achieved over one-half of the 25 percent reduction to its acquisition workforce mandated by the 1996 National Defense Authorization Act. (GAO Report, 1998) This has made the efficient utilization of the acquisition professional's time more important than ever, if the goals of low cost, high quality, fast procurements are to be met.

The time has come where declining financial, material and human resources requires the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements. (Nissen, 1997) As resources become more scarce, and the availability of personnel becomes more critical, limited, long-distance access to technical and source selection board members may be a reality that we have to contend with. One way to successfully achieve dramatic improvements is with process innovation through information technology. (Davenport, 1993) This Process Innovation Framework, as

Davenport refers to it, can be applied to nearly any process where pathologies or other shortcomings presently exist.

2. Research Objectives

The objective of this research is to conduct a thorough review of the current Best Value Source Selection process within Naval Facilities Engineering Command, Southwest Division (NAVFAC SWDIV), and to utilize a Process Innovation Framework to analyze the Best Value Source Selection process to identify pathologies and innovation opportunities. A second objective of this research is to produce a recommendation for the implementation of selected information technology enablers that have the potential to dramatically improve the Best Value Source Selection process in terms of cost, quality, and speed.

B. SCOPE OF THESIS

The audience for this thesis includes DoD policy makers, acquisition professionals, and academics. A deductive approach is used to analyze the Best Value Source Selection process within NAVFAC SWDIV, and identify process pathologies and opportunities to innovate the process through the selected use of information technology. The primary emphasis of this thesis is to innovate the Best Value Source Selection process within NAVFAC SWDIV.

The scope of this thesis includes: (1) A case study of how processes can realize dramatic improvements through the use of information technology enablers; (2) a review of the current Best Value Source Selection process within NAVFAC SWDIV; (3) identification of current process pathologies and constraints; (4) a survey of the current state-of-the-art in information technology and its potential applications to Best Value Source Selection; and (5) an assessment of the costs and benefits of potential information technology enablers. The thesis concludes with a recommendation for the implementation of selected information technology tools that have the potential to dramatically improve the Best Value Source Selection process in terms of cost, quality, and speed.

Processes other than Best Value Source Selection are outside of the scope of this thesis. While it is possible that some of the findings and recommendations of this research may be applicable to other processes, it is beyond the scope of this thesis to apply the findings of this research to processes other than Best Value Source Selection. This thesis does not consider the Best Value Source Selection process as performed by any organization other than NAVFAC SWDIV. This is also outside the scope of this thesis. However, it is possible that some of the findings and recommendations of this research may be applicable to other organizations. Additional information regarding the limitations and assumptions of this study are provided in section E below.

C. RESEARCH QUESTIONS

1. Primary

How can the Best Value Source Selection process be innovated to dramatically improve performance?

2. Secondary

a. What are the key principles of Innovation?
b. How does the Best Value Source Selection process currently function, and what pathologies or other shortcomings presently exist?
c. What constraints are imposed on Best Value Source Selection by the current technology, the organization, by human factors and by regulation?
d. How can the implementation of change enablers achieve dramatic improvements in contemporary measures, such as cost, quality, and speed?
e. How can the results of this study be generalized for application to other processes?

D. RESEARCH METHODOLOGY

A deductive approach, using a Process Innovation Framework to analyze the Best Value Source Selection process within NAVFAC SWDIV and identify process pathologies and opportunities to innovate the process through the selected use of

information technology, is used. A thorough review of the current Best Value Source Selection process within NAVFAC SWDIV is conducted. A Process Innovation Framework is used to analyze the Best Value Source Selection process to identify pathologies and innovation opportunities. Data are collected via a literature search of books, DoD manuals, the World-Wide Web, periodicals, Federal regulations, standard operating procedures and policies, magazine articles, CD-ROM systems, and other library information resources. Previous theses and case studies germane to this research are also reviewed.

Interviews are conducted with knowledgeable acquisition and information technology professionals that have experience with Best Value Source Selection and the tools currently being used within and without the organization. The Knowledge-based Organizational Process Redesign (KOPeR) tool is utilized to test various reengineered process models, due to the fact that actual implementation and testing is not possible within the scope of this research. Lastly, recommendations for Best Value Source Selection process innovation, and their application utilizing selected information technology enablers, are formulated, as identified through the methods outlined above.

E. LIMITATIONS AND ASSUMPTIONS

1. Limitations

This study and the results thereof are limited to the context of Best Value Source Selection as utilized and performed by NAVFAC SWDIV, due to the constraints of time and resources. However, the findings and recommendations of this study may be germane and applicable to a broader audience. Sources of technology and process improvement ideas are not limited to government sources only, but academia and the private sector as well. However, this research is limited to technologies that are currently available, or soon to become available, to the commercial sector or those that have a proven implementation history within academia. By limiting technical solutions in this way, the recommended solutions may be implemented more quickly.

2. Assumptions

The researcher assumes that the reader possesses some background and knowledge of acquisition procedures and terms, as well as the Federal Acquisition Regulation (FAR) and other applicable DoD and Navy regulations. The reader is expected to have a basic knowledge of organizational structures within the executive branch of the Federal government and DoD.

F. OVERVIEW OF THE ORGANIZATION OF THE THESIS

This thesis introduces the research issue of how the Best Value Source Selection process can be innovated to improve performance, and provides the background and supporting framework for why such research is necessary. Chapter II provides a review of the current acquisition workforce, the current NAVFAC SWDIV organizational structure, and the resources currently available to this organization. Chapter II also provides an overview of the Best Value Source Selection process, the regulatory background, and the potential shortcomings of the current process. Lastly, Chapter II introduces the Process Innovation Framework (Davenport, 1993) and the Knowledge-based Organizational Process Redesign (KOPeR) tool.

Chapter III presents an analysis of the Best Value Source Selection process, and identifies and diagnoses the existing pathologies of the process utilizing a Process Innovation Framework. Chapter IV presents reengineering possibilities for the Best Value Source Selection process through process innovation. Redesign alternatives, test results of the new models, and an assessment of the costs and benefits of these models are presented.

The thesis concludes in Chapter V with a recommendation for the implementation of a selected information technology solution that has the potential to dramatically improve the Best Value Source Selection process in terms of cost, quality, and speed. A solution is offered that leverages technology and process innovation to take advantage of the identified innovation opportunities. Lastly, opportunities for further research are provided.

II. BACKGROUND

A. GENERAL BACKGROUND

1. The Acquisition Workforce

The acquisition workforce is defined many different ways within various contexts. Over the past several years, the DoD has used various definitions to identify the DoD acquisition workforce without achieving consensus.

DoD instruction 5000.58, "Defense Acquisition Workforce," change 3, dated January 13, 1996, defines the acquisition workforce as "permanent civilian employees and military members who occupy acquisition positions, who are members of an acquisition corps, or who are in acquisition development programs." Section 912(a) of the National Defense Authorization Act for FY 1998 defined the term "defense acquisition personnel" as "the military and civilian personnel, excluding civilian personnel employed at a maintenance depot, who are assigned to or employed in DoD acquisition organizations as specified in DoD instruction 5000.58." DoD instruction 5000.58 defines "acquisition organization" as "an organization, including its subordinate elements, whose mission includes planning, managing, and executing acquisition programs that are governed by DoD regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," change 4, dated May 11, 1999.

Lastly, section 931(d) of the National Defense Authorization Act for FY 2000 (Public Law 106-65) defines the term "defense acquisition and support personnel" as "military and civilian personnel, excluding civilian personnel employed at a maintenance depot, who are assigned to or employed in DoD acquisition organizations as specified in DoD instruction 5000.58 and any other organizations that the Secretary of Defense may determine to have a predominantly acquisition mission." (DoDIG Report, 2000, pp. 1-2)

The definition of the DoD acquisition workforce is important in determining the historical impact of DoD acquisition workforce reductions. Using the Congressional definition of acquisition workforce found in Public Law 106-65, DoD reduced its

acquisition workforce from 460,516 to 230,556 personnel, or about 50 percent, from the end of FY 1990 to the end of FY 1999. (Figure 1) As DoD implemented its

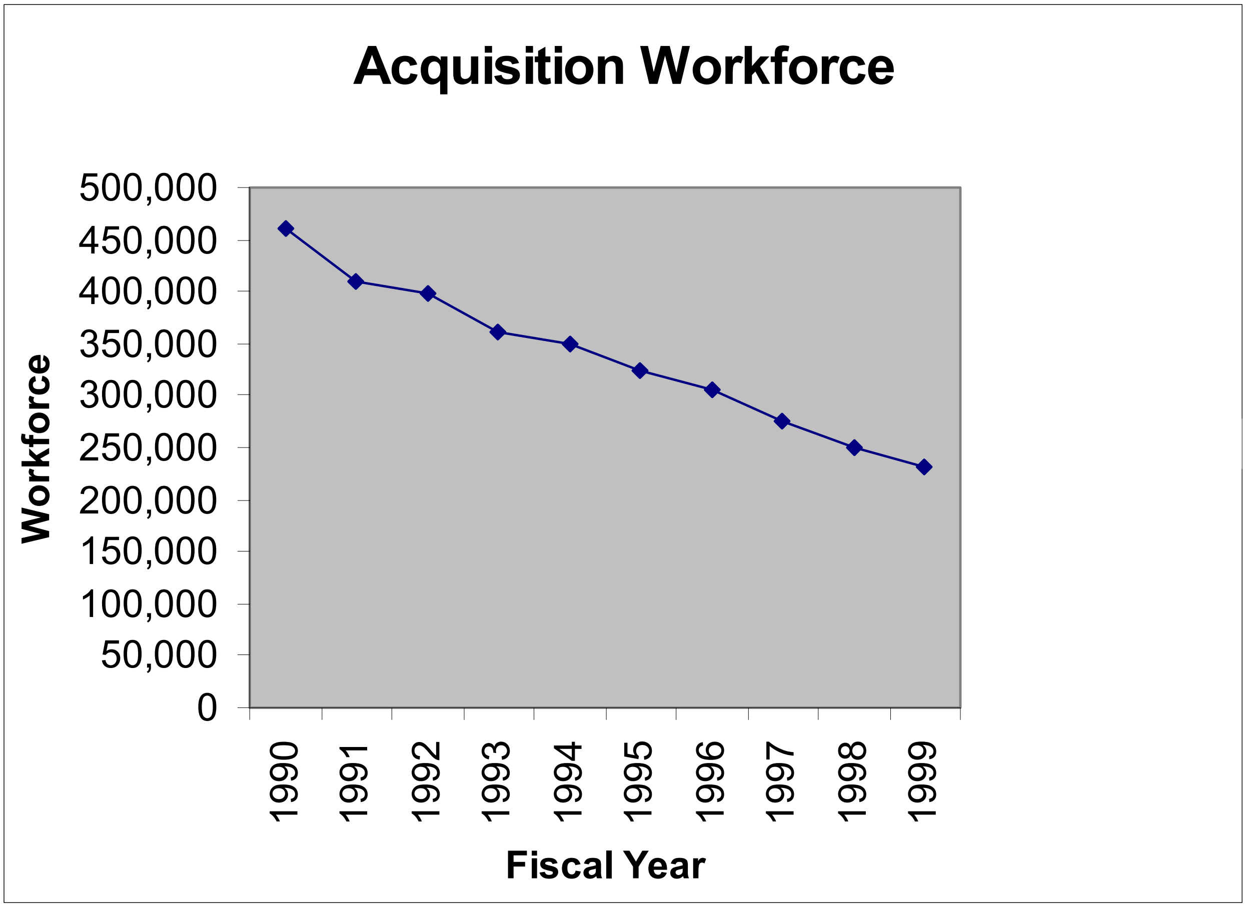


Figure 1. Number employed in acquisition workforce by year. Developed by Researcher.

acquisition workforce reductions, the number of DoD Contracting Officers also decreased. From FY 1994 to FY 1999, the total number of DoD Contracting Officers decreased from 7,465 to 6,505, or approximately 13 percent. (DoDIG Report, 2000, pg. 9) However, research shows that their collective workload has not been reduced proportionately. (DoDIG Report, 2000, pg. 9) From FY 1990 through FY 1999, the value of DoD procurement actions decreased from approximately $144.7 billion to $139.8 billion, or about 3 percent. During the same period, the number of DoD procurement actions increased from approximately 13.2 million to 14.8 million, or about

12 percent. (Figure 2) Contracting actions over $100,000 increased from 97,948 to 125,692 per year, or about 28 percent, over the same period. (DoDIG Report, 2000, pg. 10)

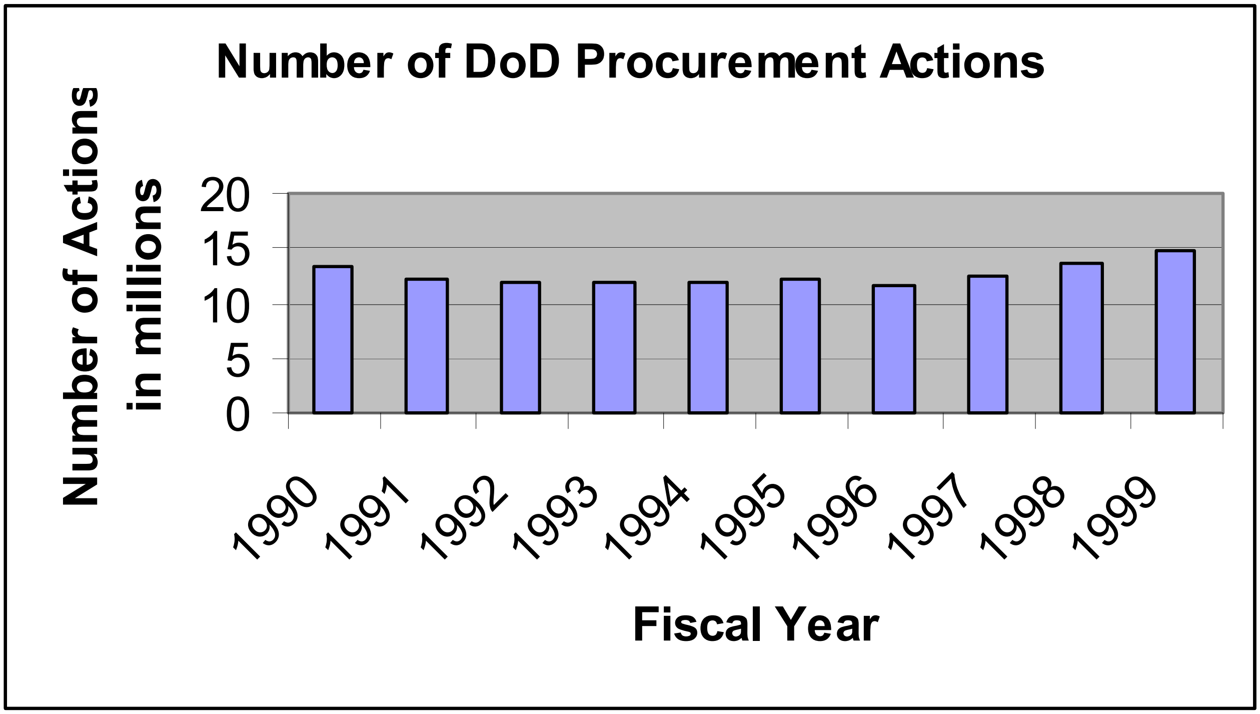


Figure 2. Number of DoD procurement actions by year. Developed by Researcher.

Of particular interest to this research, the DoDIG report indicates that the Naval Facilities Engineering Command (NAVFAC) acquisition workforce declined from 20,224 in FY 1990 to 15,791 in FY 1999, a reduction of approximately 22 percent. However, during the same period the total dollar value of "other services and construction" contract awards within DoD have increased from $36.4 billion to $52.0 billion, or nearly 43 percent! (DoDIG Report, 2000, pg. 14) While not all of the 43 percent increase is in construction services, nor is all of the increase directly attributable to NAVFAC, these figures do serve to illustrate two generally opposing trends. The acquisition workforce is shrinking, but the given workload of that workforce is increasing.

Although the DoD has been continually working on acquisition reform for more than 20 years, the Federal Acquisition Streamlining Act (FASA) of 1994 and other reform legislation picked up the pace of reform in the mid to late 1990's. DoD implemented over 40 reform initiatives since FY 1994 in an attempt to improve the acquisition process within DoD, and improve efficiency in contracting. Some of these reforms and regulatory changes are discussed in Chapter II, section A.4. The general consensus is that these reform initiatives have had mixed results. These initiatives help to offset some of the impact of the acquisition workforce reductions, and may have increasing beneficial effects as they are given more time to take hold within the DoD. However, there is still much concern due to staffing reductions, which have clearly outpaced productivity increases and the acquisition workforce's capacity to handle its still formidable workload. (DoDIG Report, 2000, pg. 75)

According to the DoD Inspector General's report, "DoD Acquisition Workforce Reduction Trends and Impacts," one of the most common concerns within the 14 DoD acquisition organizations it reviewed is that the recent workforce reductions have resulted in "insufficient staff to manage requirements." This opinion is held by nine of the 14 acquisition organizations reviewed for the DoDIG report. Four of the 14 DoD acquisition organizations stated in the DoDIG report that they are able to process all of their mission-critical actions; however, the amount of time and level of scrutiny put into these actions is not sufficient to ensure accuracy and minimize risk. (DoDIG Report, 2000, pg. 19)

There is also great concern for the future of these organizations, given the likelihood that the DoD acquisition workforce will lose an additional 55,000 experienced personnel, or about 16 percent of the acquisition workforce, through attrition from FY 1999 to FY 2005. (DoDIG Report, 2000, pg. 29) The USD (AT&L) echoes the DoDIG report, stating that the acquisition workforce has "decreased as far as it should go," adding that the size of the acquisition workforce may have to increase. (DoD Report, 2000, pg. 3) During the same period, the aggregate of DoD operations and maintenance, procurement, and RDT&E procurements are projected to increase by six percent using constant FY 2000 dollars. These acquisition organizations also expressed serious

concerns related to mismatches between the capacity of the reduced workforce and its workload, adverse performance trends, implications of skills imbalance and projected high attrition, and disconnects in workforce planning. (DoDIG Report, 2000, pg. 4)

Another concern expressed by one of the acquisition organizations is that, because of acquisition workforce reductions, at any given time about one-third of their personnel were on some type of travel and not able to attend to the full spectrum of their duties. For example, their Commander spent 42.4 percent of his time at his organization and 34.5 percent of his time in Washington, D.C. for the period of March 16, 1998 to October 23, 1998. (DoDIG Report, 2000, pg. 108) As the acquisition workforce continues to shrink without a commensurate reduction in workload, it will become increasingly difficult to make efficient use of the limited resource of time due to travel commitments.

There are also some disturbing demographic trends developing within the acquisition workforce. The average age of the DoD acquisition civilian workforce is projected to increase from approximately 46 in FY 1999 to 48 in FY 2007. (DoDIG Report, 2000, pg. 24) The percentage of the acquisition civilian workforce eligible for retirement is projected to increase from 12.4 percent in FY 1999 to 18.1 percent in FY 2005. (DoDIG Report, 2000, pg. 26) Many DoD acquisition organizations believe that these and other ominous DoD acquisition workforce demographic trends, along with the projected future reductions in the DoD acquisition workforce, will adversely affect the ability of these commands to accomplish their missions in the future. (DoDIG Report, 2000, pg. 29) Ten of the 14 acquisition organizations reviewed in the DoDIG report believe that the future acquisition workforce reductions will "impair their ability to accomplish their missions." One organization states that "if the workload did not decrease or continues to increase as it has [over the last 2 years], the lead time would lengthen to the point where the organization would not be able to effectively award contracts within the time constraints imposed by the budget cycle and not be responsive to the requirements of the active forces." (DoDIG Report, 2000, pp. 30-31)

Congress, being aware of these trends and their potential impacts, directed the Secretary of Defense, in the National Defense Authorization Act for FY 1998, to submit

to them a report containing "a plan to streamline the DoD acquisition organizations, workforce, and infrastructure and to conduct a review of the organizations and functions of DoD acquisition activities and of the personnel required to carry out those functions." (DoDIG Report, 2000, pg. 33) In this report, the Secretary of Defense committed to "specific development initiatives to help ensure that the acquisition workforce has the experience and competencies required to accomplish future acquisitions." The report identified and described an urgent need to "re-skill the acquisition workforce to transition from a workforce of doers to a workforce that manages the work of others." (DoDIG Report, 2000, pg. 33)

A working group was established to address the Secretary's report findings, and to develop a methodology for translating the report into a workable plan. As a result, the working group developed a set of 27 "universal managerial and leadership competencies" for the acquisition workforce. This list of competencies is meant to guide the education and training requirements for the future acquisition workforce. (DoDIG Report, 2000, pg. 34) Section 808 of the FY 2001 Defense Authorization Act increased the education requirements for contract specialists by requiring that all GS-1102s possess a bachelor's degree from an accredited institution and at least 24 semester hours of business-related studies, regardless of work experience. (Lunney, 2001) There seems to be universal agreement among experts that technical innovations and the need for greater productivity have increased the need for acquisition employees to develop new skills through continuous education and training. In the future, acquisition personnel will face increased challenges, but they will also have unprecedented opportunities to play an even broader leadership role within the acquisition community. (DoD Report, 2000, pg. 3) The education and training requirements for the future acquisition workforce, and the tools and processes that they employ, must reflect these realities.

The reductions in the acquisition workforce are relevant to this thesis because it speaks to the fundamental premise of this research. Specifically, the projected gap between acquisition requirements and the available resources can only be bridged by redesigning processes to eliminate pathologies and maximize value-added activities. The

Acquisition 2005 Task Force Final Report observed "there is an ongoing effort across the acquisition community to reengineer processes, restructure organizations, and realign or reassign work." The report concludes, "these efforts [to reengineer processes] should continue." (DoD Report, 2000, pg. 43) It is the goal of this research to analyze the Best Value Source Selection process to identify pathologies and innovation opportunities, and to produce a recommendation for the implementation of selected information technology enablers that have the potential to dramatically improve and add value to the process.

2. The Current Organizational Structure

NAVFAC, Southwest Division (SWDIV) is one of four Engineering Field Divisions (EFDs) within NAVFAC. SWDIV is headquartered in San Diego, California. Officially established on October 1st, 1989, it handles the planning, design, and acquisition of Navy and Marine Corps facilities within its footprint. Its footprint includes the states of California, Arizona, Nevada, Oregon, Washington, Idaho, Montana, and Alaska. The command also provides technical advice and assistance on the maintenance and operation of facilities, and handles the acquisition and disposal of real estate. The Navy and Marine Corps own more than 267,000 acres of land, with a total facilities investment of $4.6 billion, in San Diego County alone! SWDIV is the primary provider of engineering services for these facilities. SWDIV's sole mission is to provide the support required to enable warfighters to succeed in their national defense mission. It is responsible for leadership in facilities acquisition, installation engineering and support, and Seabees and contingency engineering required by the Navy and Marine Corps. (Southwest Division Homepage, 2001)

SWDIV's current organizational structure is a direct result of a December 1995 customer survey, which revealed that SWDIV's customers were not happy with its services. They wanted SWDIV to be better, faster, cheaper, and easier to use. As a result of this customer feedback, and various OPNAV and CINCPACFLT initiatives regarding Navy infrastructure reduction in the post-BRAC era, a West coast reengineering team (RET) was formed to reengineer the process of delivering products and services to

SWDIV's customers. The RET was tasked with accomplishing the following three things:

1. Focus the process on customers rather than on internal functions.
2. Involve customer points of contact throughout the process as early and as often as possible.
3. Ensure that customers perceive the redesign as a "seamless" delivery process providing dramatically improved products and services at a decreased cost.

Beginning in August 1996, SWDIV reengineered into the organizational structure that exists today. SWDIV is comprised of several business lines. These business lines include the Engineering Resources group, the Resident Officer in Charge of Construction (ROICC) advocacy group, the Construction Specialists group, the Facilities Support Contracts (FSC) group, the Environmental group, the Natural Resources group, and the Contracts group. The command is divided into geographic teams, or Area Focus Teams (AFTs). Each team provides "cradle to grave" facilities support to its customers for each of the major business line disciplines. While each team provides both pre and post-award contract support to its customers, these functions are typically physically separate. Commonly, the pre-award function occurs at the division headquarters, where the AFTs are located, while the post-award function occurs at or near the customer's location. The post-award offices are referred to as the Resident Officer in Charge of Construction (ROICC). While this is not true of every team, it is by far the most common arrangement within SWDIV. Organizational charts of SWDIV have been provided in Appendix A.

SWDIV's organizational structure is relevant to this research because typically both AFT and ROICC personnel are members of the Source Selection Board (SSB) as either technical or price evaluators (or both). As a result, some members of the SSB must travel to take part in the board, given that the ROICC and AFT offices are physically separate. While board members are on travel, it is difficult, if not impossible, for them to attend to their other duties. This physical separation also causes difficulties in acquisition planning, as it is challenging to achieve full participation in acquisition planning

meetings. These and other potential pathologies that result from the current SWDIV organizational structure are addressed in greater detail in Chapter II, section A.5.

It should be noted that the current SWDIV organizational structure provides some advantages as well. Prior to 1996, SWDIV was a typical "stovepipe" organization. Each business line had its own distinct team, none of which were focused on any particular customer or group of customers. There was also no mechanism in place to monitor and manage the end-to-end acquisition process. As a result, little attention was given to the "big picture," projects were "handed off" from team to team, and customers did not have a single "store front" to go to at SWDIV. While the current SWDIV organizational structure is doing much to correct these deficiencies, many processes within SWDIV suffer from pathologies that may result from this structure. This thesis focuses on how the current SWDIV organizational structure may create pathologies in, or provide innovation opportunities for, the Best Value Source Selection acquisition process.

3. Shrinking Resources at Southwest Division, NAVFAC

Just as the acquisition workforce as a whole has experienced a reduction in numbers without a corresponding reduction in workload, SWDIV's workforce shrank by approximately 32% over the past four years while the amount of work remained relatively steady. SWDIV's workforce fell from a high of 1,796 employees in FY 1997 to its current level of 1,217 in FY 2001. During this same period, the workload only dropped by half as much, or approximately 15%, from a high of $1,604,283,098 in FY 1997 to $1,365,710,000 in FY 2001. (SWDIV Historical Brief, 2001) (Navy PMRS, 2001) It should also be noted that the FY 1997 workload was the highest annual total in the past decade, and that the next highest annual total is FY 2001. With the exception of FY 1997, SWDIV's workload remained relatively steady from FY1993 through FY 2001. (Figure 3)

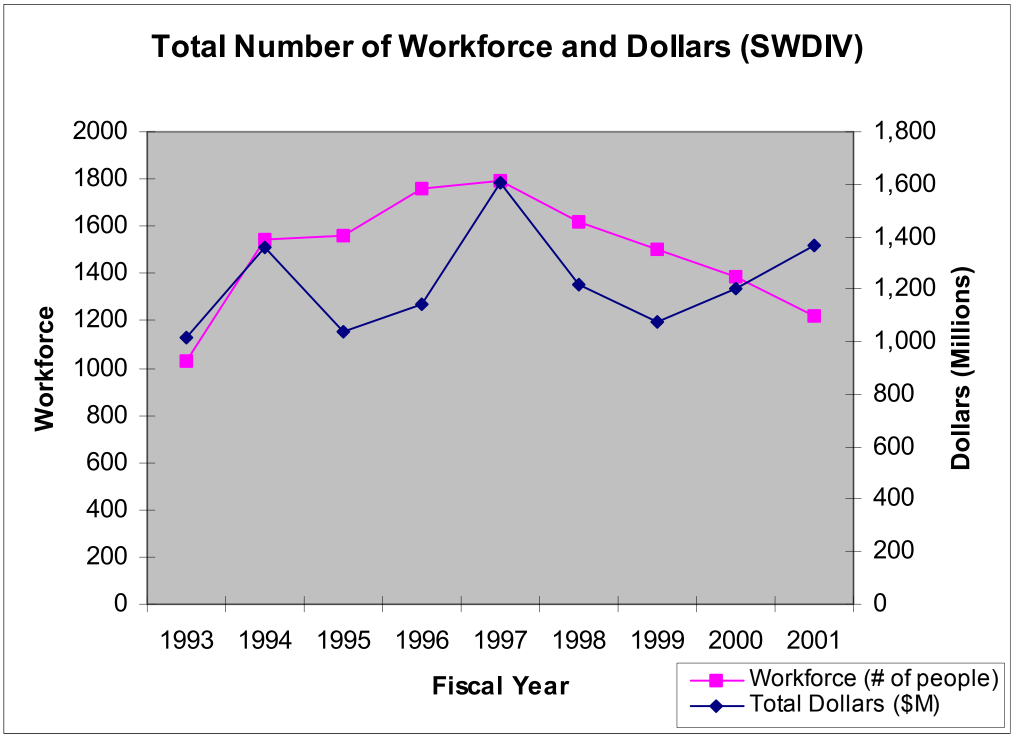


Figure 3. Total Number of Workforce and Dollars. Developed by Researcher.

However, similar to the trend identified by the DoDIG for all of DoD, the average number of dollars per procurement action at SWDIV increased steadily from FY 1995 through FY 1999. (DoDIG Report, 2000, pp. 10, 22) (Figure 4)

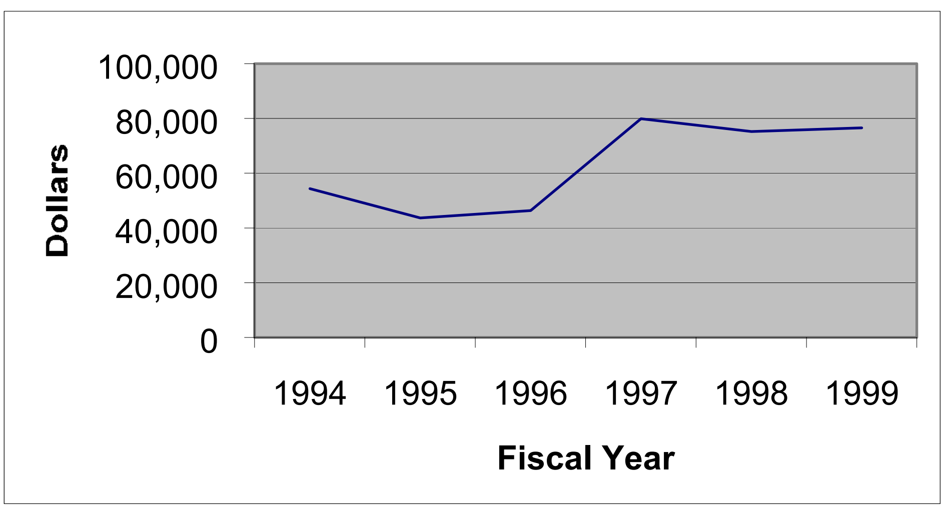


Figure 4. Average Dollars per procurement action. Developed by Researcher.

According to the SWDIV Historical Brief for FY 1998, the resources at SWDIV continue to grow scarcer while the workload remains high. SWDIV's contracts group suffered an 18 percent reduction in its workforce from FY 1997 to FY 1998, yet still delivered the same amount or more services to its customers. The brief goes on to state "the speed of work continues to increase – increase because the people doing the work find faster ways to accomplish the tasks involved." (SWDIV Historical Brief, 2001) The FY 1999 SWDIV Historical Brief documents that the contracts group lost an additional 27 percent of its workforce from FY 1998 to FY 1999. (SWDIV Historical Brief, 2001)

NAVFAC's workload projections level out at 5,800 work-years (WY) from FY 2002 through FY 2006. This figure represents the number of full-time-equivalent employees that are necessary to accomplish the projected workload for a given fiscal year. However, NAVFAC's gate projections drop to 5,650 WY for FY 2002 and to a high of 5600 WY and a low of 5428 WY for FY 2003. (Figure 5) Gate WY figures

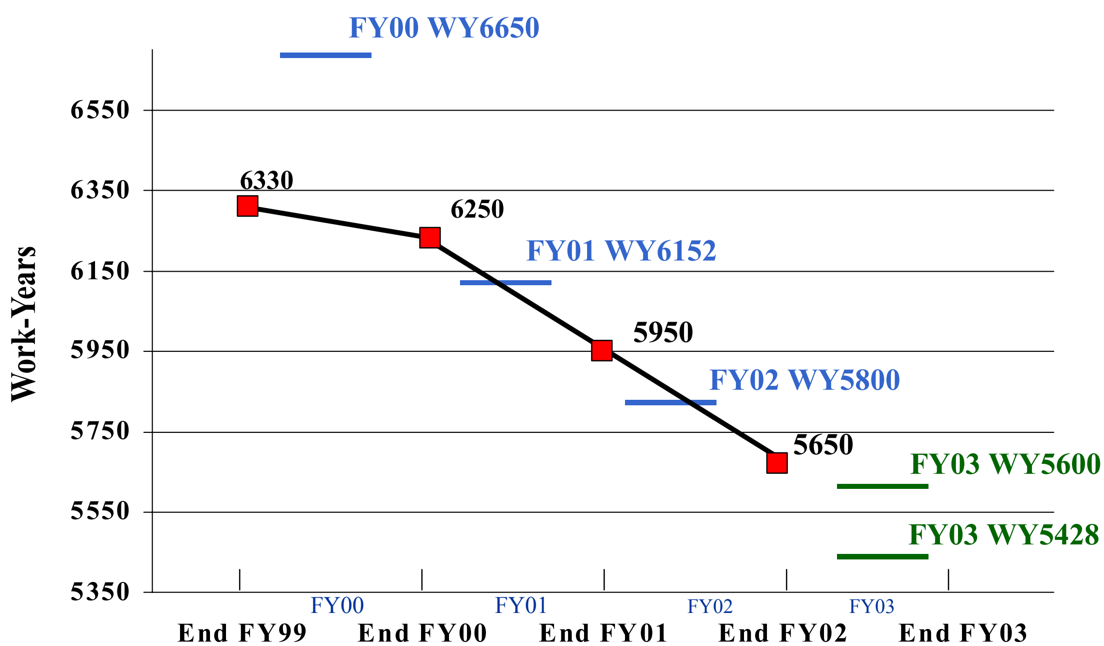
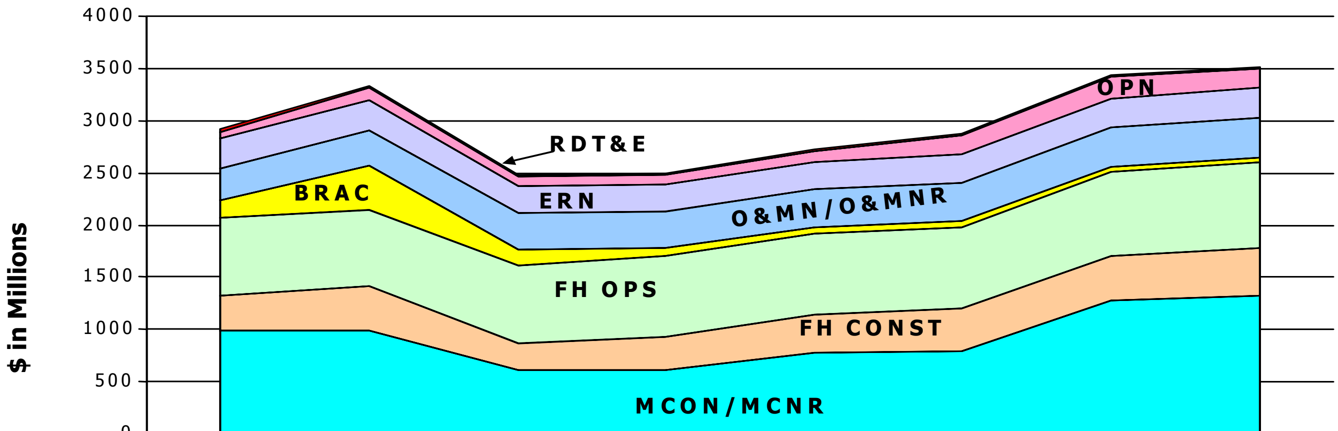


Figure 5. NAVFAC Gate Projections. Developed by Researcher.

represent the actual number of full-time-equivalent employees that are allowed on NAVFAC's roles for a given fiscal year. The difference between the annual workload and gate figures represents a human resource shortage within NAVFAC. This serves to illustrate the continued projected shortfall in the number of employees available versus the projected NAVFAC workload for the next several fiscal years. SWDIV is facing similar projected workload leveling and incrementally lower gate figures in future fiscal years as NAVFAC as a whole. In addition, NAVFAC's projected execution workload in dollars terms is projected to grow from \$2.485 billion in FY 2002 to \$3.509 billion in FY 2007. (Figure 6)



	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY06	FY07
RDT&E	23	21	25	18	14	19	13	13
OPN	69	111	86	91	102	178	203	174
ERN	282	294	256	256	261	274	284	289
O&MN/O&MNR	309	331	354	353	366	366	375	385
BRAC	163	427	147	80	54	51	52	54
FH OPS	749	736	754	776	780	790	803	818
FH CONST	340	418	256	318	358	409	426	452
MCON/MCNR	984	993	607	609	781	785	1275	1324

Figure 6. NAVFAC Workload Projections. Developed by Researcher.

While many of these figures are projections, they serve to support the theory that the recent historical trend of having to do the same amount of work (or more) with fewer resources is going to continue, and may even become more acute, within SWDIV. This demonstrates the growing need to identify pathologies within acquisition processes at

SWDIV and to maximize value-added activities within these processes to realize dramatic improvements in terms of cost, quality, and speed.

4. Regulatory Background and Recent Changes

Acquisition reform and regulatory changes in recent years have focused on initiatives to reduce nonessential acquisition requirements, and to increase efficiency and reduce cost. (Kaminski, 1996) Many of the acquisition reform initiatives have been patterned after private industry “best practices.” However, adopting industry best practices requires a total reevaluation of the way the DoD does business. It also requires making intelligent use of information technology tools. Historically, the DoD lags behind the more radical innovations introduced by the private sector, such as relying on the Internet for purchasing and contract management. If information technology tools are utilized properly, in conjunction with acquisition reform and process redesign initiatives, the DoD will be able to move from its current bureaucratic, paper-based, manual acquisition process toward its goal of automating the process, and making contracting operations more efficient. (Spector, 1997)

Congress, in an attempt to address the ever-changing demands and problems within the acquisition community, enacted several significant legislative initiatives over the past 10 to 15 years. The more noteworthy initiatives, as they relate to Best Value Source Selection, are the Competition in Contracting Act (CICA), the Federal Acquisition Streamlining Act (FASA), the Federal Acquisition Reform Act (FARA), and the FAR Part 15 Rewrite. These reform initiatives are outlined below.

a. Competition in Contracting Act (CICA)

CICA was enacted in 1984 and was the first of the major, modern acquisition reform initiatives. CICA has a significant impact on the way the DoD does business. In fact, so far reaching is the impact of CICA that it affects virtually all DoD acquisition participants, both public and private. (Sherman, 1995, pg. 79) The Act mandated many broad and encompassing changes to the acquisition process. CICA requires that executive agencies “use standard procurement planning” when preparing for the procurement of goods or services. (Sherman, 1995, pg. 10) In general, CICA

instructed Federal agencies to be more diligent and deliberate in planning and preparing for competitive procurements, such as Best Value Source Selection. (Spector, 1997)

b. Federal Acquisition Streamlining Act (FASA)

President Clinton signed FASA into law in 1994. FASA was a major element in the President's "Reinventing Government" initiative. (Clinton, 1993) FASA affects 225 provisions of Federal procurement law. (Gansler, 1998) FASA introduces legislative changes that insert practical, result-oriented policies into the acquisition process. (Sherman, 1995, pg. 92) The Act provides a number of authorities that streamlined the acquisition process and makes significant changes in the manner in which relatively low-dollar procurements are conducted.

A key provision of FASA is the implementation of a government-wide electronic contracting system. As a result of this provision, FACNET was established with a mandate to move the Federal acquisition process from a paper-based environment to an electronic data interface-based environment. This initiative also affords the Federal government the opportunity to provide a "single face to industry" as well as "interoperability" among the Federal acquisition organizations. This single FASA provision is the basis for many of the current EDI and business-to-business (B2B) initiatives that are ongoing within the Federal acquisition community.

c. Federal Acquisition Reform Act (FARA)

FARA was enacted in 1996, in an attempt to make the Federal acquisition process more attractive to industry. FARA removes the requirement for interim FACNET certification to be accomplished before agencies can use the simplified acquisition procedures (SAP) for acquisitions between $50,000 and $100,000. As a result of FARA, agencies no longer need to become FACNET certified to qualify for the $100,000 SAP threshold.

FARA removes additional barriers by allowing simplified acquisition procedures to be used for commercial item purchases up to $5 million. (FARA, 1996) The Act also eliminates the GSA's protest resolution authority over computer/information technology procurements. This gives individual acquisition

agencies more control over the coordination and purchase of their own information technology requirements, and allows them to buy directly from commercial vendors, rather than forcing them to utilize a GSA schedule.

d. FAR Part 15 Rewrite

Competitively negotiated source selection procedures are primarily governed by FAR Part 15, Contracting by Negotiation. FAR Part 15 establishes the framework for the government's business relationship with industry through the use of competitive negotiation. FAR Part 15.002(b) states that, "the procedures of this part are intended to minimize the complexity of the solicitation, the evaluation, and the source selection decision, while maintaining a process designed to foster an impartial and comprehensive evaluation of offerors' proposals, leading to selection of the proposal representing the best value to the government." Clearly, this statement intends to emphasize that the complexity of competitive negotiation procedures is to be minimized, so long as the process is fair and results in the best value to the government.

In 1995, Dr. Kelman, the Administrator of the Office of Federal Procurement Policy and the Department of Defense agreed to reform the rules governing source selection procedures for Federal and Defense Department contractors. The product of this agreement was the FAR 15 Rewrite, which became mandatory for use on 1 January 1998. (Defense Acquisition Deskbook, 1997) The FAR 15 Rewrite is a further attempt to align the DoD with the business practices of "high performance" private industry enterprises. The goals of the Rewrite are to infuse and encourage innovative techniques into the Best Value Source Selection process, simplify the process, and facilitate the acquisition of "best value" products and services. (Defense Acquisition Deskbook, 1997)

The Rewrite emphasizes the need for Contracting Officers to use effective and efficient acquisition methods and processes, and eliminates regulatory burdens on industry and government. The final rule reengineers the contracting by negotiation process, with the intent of reducing the resources required for performing source selection and reducing the time to conduct source selection-type procurements. This

thesis does not parrot the details of FAR Part 15 or the Rewrite; however, the following items are provided to highlight the major FAR 15 Rewrite rule changes as they relate to Best Value Source Selection:

1. **Best Value Continuum:** "Best value" is the expected outcome of any acquisition that ensures the customer's needs are met in the most effective, economical, and timely manner. It is the result of the combination of the unique circumstances of each acquisition, the acquisition strategy, choice of contracting method, and the award decision. Negotiated acquisition techniques used to obtain best value may span a "continuum" from low priced technically acceptable to tradeoffs between price, past performance, and the best technical solution. The "best value continuum" is a recognition that the government always seeks to obtain the best value in negotiated acquisitions using any one or a combination of source selection approaches, and that the acquisition should be tailored to the requirement. At one end of this continuum is the low priced technically acceptable strategy and at the other end is a process by which elements of a proposed solution can be traded off against each other to determine the solution that provides the government with the overall best value. Note that all such tradeoffs are conducted according to the source selection factors and subfactors identified in the solicitation.
2. **Tradeoff Decisions:** "Best Value" decisions, under the old source selection rules, are now called "Tradeoff" decisions. Tradeoffs are used when it is in the best interest of the government to consider award to other than the lowest priced offeror or other than the highest technically rated offeror.
3. **Past Performance:** Past performance is still, by statute, a mandatory evaluation element of all negotiated source selections. However, one caution regarding the use of past performance on a pass/fail basis is articulated in the rule. If a small business' past performance is not acceptable, and their technical proposal is otherwise acceptable, the matter shall be referred to the Small Business Administration for a Certificate of Competency determination.

The new rule also asserts that the government will not rely on adverse past performance information that contractor's have not had an opportunity to comment on, and establishes revised thresholds for collection and use of past performance. The rule also expands the coverage regarding what information can be considered for those contractors with no relevant past performance history to include key personnel who have relevant experience, information regarding predecessor companies, and subcontractors who will perform major or critical aspects of the requirement.

4. **Neutral Ratings:** The reference to neutral ratings was removed from the final rule in recognition of the dilemma encountered by both industry and government in defining the term "neutral." The language in the final rule is extracted directly from statute stating, "In the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on past performance."
5. **Exchanges:** Exchanges of information among all interested parties, from the earliest identification of a requirement through receipt of proposals, are encouraged. The purpose of these exchanges is to improve understanding of government's requirements and industry capabilities. Information exchanged may include the acquisition strategy, contract type, terms and conditions, acquisition planning schedules, feasibility of the requirement and suitability of the proposal instructions and evaluation criteria, including the approach for assessing past performance information. Techniques may include conferences, public meetings, market research, one-on-one meetings, presolicitation notices, draft Requests for Proposal, Requests for Information, and site visits.
6. **FAR Part 42 Requirement:** All proposals must first be initially reviewed and evaluated. If the government decides that award without discussions is possible and appropriate, then the government may decide to give offerors the

opportunity to clarify certain aspects of proposals. In addition to what the government could previously cover, clarifications now include the relevance of an offeror's past performance information and adverse past performance information on which the offeror has not previously had an opportunity to respond. It is important to understand that this requirement does not include the assessments of the government source selection team of the past performance information available. This addresses the FAR Part 42 requirement that contractor's have an opportunity to comment on past performance evaluations conducted by the government.

7. **Communications:** Once the government decides that a competitive range will be established, communications can not provide an opportunity for the offeror to revise their proposal, and:
   a. Must address adverse past performance information on which an offeror has not had a prior opportunity to comment. (It is important to understand that this requirement does not include the government's "evaluation" of the past performance data received. This requirement only goes to that "data" received by the SSA that was not previously provided to the offeror for review and comment.)
   b. May only be held with offerors whose exclusion from, or inclusion in, the competitive range is uncertain. The objective is to enhance the government's understanding of proposals, allow reasonable interpretation of the proposal, or facilitate the government's evaluation process for the purpose of establishing the competitive range.

8. **Competitive Range:** The previous rule of "when in doubt leave them in" is replaced with "when in doubt leave them out." The competitive range now includes all of the most highly rated proposals, unless the range is further reduced for purposes of efficiency. Firms do not bear the expense of unnecessary bid and proposal expenses when they are not one of the most highly rated offerors.

9. **Efficiency:** There is no statutory or regulatory definition of efficiency. As circumstances vary this may include, but is not limited to, the nature of the requirement (including production lead-time, delivery requirements, etc.), the resources available to conduct the negotiations, the variety and complexity of solutions offered, and any other relevant matters. The judgment of the Contracting Officer, as to the greatest number that will permit an efficient competition among the most highly rated proposals, is the requirement established by statute. Contracting Officers should first determine which offerors are the most highly rated and then limit the number of offerors in the competitive range to the largest number that will permit an efficient competition. The rationale used to establish the competitive range should be clearly documented in the competitive range determination. Additional competitive range determinations are possible based on the result of discussions with offerors.
10. **Pre-Award Debriefings:** Early, or preaward debriefings introduced by the Clinger-Cohen Act, are conducted at the offeror's request. The purpose of these preaward debriefings is to provide early feedback to industry concerning why the proposal failed to be competitive. This early debriefing, while limited in scope and content, provides sufficient information to offerors about their proposal evaluation to allow them to benefit from the exchange and to apply that information to other competitions in a timely manner. Offerors will not receive a comparative assessment of the other offerors' proposals in an early debriefing.
11. **Discussions:** The primary purpose of discussions is to maximize the government's ability to get the best value. Discussions must be conducted with every offeror in the competitive range. The objective of discussions is to reach a complete agreement between the government and the offeror regarding the requirements in the RFP and the offeror's proposed solution. In the commercial world, this is often referred to as a "meeting of the minds."

This is the opportunity for the government to engage in "hard bargaining" to ensure that the government's requirements are met subject to specific limitations (e.g. favoring one offeror over another; revealing an offeror's solution, technology, or intellectual property to another offeror; revealing an offeror's price without that offeror's permission; revealing the names of individuals providing past performance information; or knowingly furnishing source selection information). While the content of discussions is a matter primarily within the discretion of the Contracting Officer, discussions must be both meaningful and fair. To be meaningful, the negotiations must identify all deficiencies, all significant weaknesses and concerns about past performance information received by the SSA.

12. **Final Proposal Revisions:** The revised rule allows the government and industry to tailor the number of requested or allowed proposal revisions to each offeror's proposal. This change recognizes the fact that proposals are rarely alike, nor are the depth and range of negotiations. After the government has completed discussions with all offerors and has exercised the opportunity to obtain revisions, as appropriate, all offerors shall be given an opportunity to revise their proposals simultaneously. This final proposal revision opportunity uses a common cut off date and time to ensure a fair competitive environment, especially for time critical commodities. Most importantly, if after receipt of final revised proposals it becomes necessary to subsequently clarify matters, the government can do so without any additional request for final offers from all offerors. If the government needs to further expand negotiations, a second final offer opportunity must be extended to all offerors, however, this should be unlikely if the initial revisions are managed well.

13. **Cost or Pricing Data:** The revised rule has simplified the Truth in Negotiations Act (TINA) exception when modifying a contract or subcontract for commercial items. Under the new rules, if a modification does not change

the item being purchased from a commercial item to a noncommercial item, then the modification is exempt from the requirement to obtain cost or pricing data. The new rule also eliminates the need for contractors to submit Standard Forms 1411 and 1448.

The basics of contract pricing remain the same, even with all of the FAR 15 Rewrite rule changes. Contracting Officers are still required to buy at fair and reasonable prices, and must document price reasonableness in the price documentation. The hierarchical preference policy regarding the types and amount of pricing information to obtain from contractors also remains unchanged. Except for the change to the rules regarding the modification of commercial contracts, cost or pricing data requirements also remain unchanged.

The FAR 15 Rewrite helps to ensure that the government receives the best value product or service, and balances that with the fair treatment of the offeror. (DoD 5000 Series, 1996) The Rewrite allows the Contracting Officer more flexibility and discretion in their decision making process, and brings the process of contracting by negotiation more closely in line with commercial practices. This newfound flexibility and discretion provides a unique opportunity to innovate the current Best Value Source Selection process to eliminate process pathologies.

As these reforms demonstrate, the acquisition community finds itself in the midst of a revolution in the way it does business. Many believe that the changes to date are only the tip of the iceberg. Not only are the recent changes dramatic, but they are being implemented at an ever more increasing rate. Given the fact that information technology is the driving force behind most of these reforms, and the historically rapid advancements in information technology, the pace at which future changes will occur is almost certain to increase. This reality makes the identification of process pathologies, and the intelligent application of information technology to these processes, ever more critical.

5. Potential Shortcomings of the Current Source Selection Process

Prior to conducting this research, and based on previous, personal experience and anecdotal evidence, this researcher strongly felt that the two biggest process pathologies associated with the Best Value Source Selection process within SWDIV were: (1) the TEB/SSB chairperson's ability to manage, collect, and consolidate the volumes of source selection material (proposals, individual evaluations, past performance reports, etc.); and (2) the physical limitations of having to sequester a TEB/SSB in one location to perform a source selection evaluation in a secure and controlled environment. Both of these pathologies stem from the same root cause. Specifically, they are both a result of having to work with hard-copy documents in a physically secure environment. The limitations that the management and security of hard-copy documents imposes on the Best Value Source Selection process hamstring the process by requiring that board members check documents in and out from the chairperson, and that the chairperson must spend their time managing paper instead of managing people and ideas.

A survey form was distributed to all of the contract specialists within SWDIV to determine whether or not these issues are true pathologies and innovation opportunities, and not just the opinion of this researcher. This survey is provided as Appendix B to this thesis. The results given below are not scientific. The limitations of time and resources did not allow for a true statistical sampling or personal, follow-up interviews. However, the results are consistent with the pathologies outlined above, and are amazingly consistent throughout the surveys.

More than 30 surveys were completed and returned. Consistently, contract specialists responded that the Best Value Source Selection process is slower, but results in a better quality product or service for their customer, than the "Invitation for Bids" or IFB process. However, respondents are nearly evenly split with regard to cost, with half stating that source selection results in a "less expensive" product or service, and half stating "more expensive" (given total life-cycle cost). Nearly all respondents also state that, in their experience, TEB/SSB members either "sometimes" or "often" have to travel to participate in the board, with two respondents stating "always." Also, nearly all

respondents state that they believe that the tools currently available to them are "adequate" to perform source selection acquisitions.

Selected comments from the surveys are provided below:

1. "This process is more time consuming and expensive because more expertise from different departments are involved in the Source Selection Process."
2. "Review/approval of reports take too long."
3. "I would like to see the P-68 $30 million threshold for BCM [Business Clearance Memorandum] be increased."
4. "Time consuming. The lack of proper facilities to perform evaluations. The lack of proper equipment for evaluators (computers, printers, phone). Lack of Source Selection technical expertise. Too many reports (QEB, TEB, PEB, SSB and a Business Clearance)."
5. "More time consuming process…"
6. "Make the process more electronically accomplished."
7. "Timely, more administrative costs."
8. "It takes a long time for this process."
9. "It's a long process. Too much documentation and too many people involved."
10. "More time required; difficult to coordinate concerned parties involved."
11. "Too time consuming."
12. "Very time consuming."
13. "It is time consuming, and the amount of paperwork and processes to go thru [sic]."
14. "I would like to see people from the field have the opportunity to travel to San Diego to assist them [the SSB]. I believe San Diego does more Best Value Source Selections, and I believe the level of expertise in San Diego is extremely high. People working in the field could benefit by traveling to San Diego and assisting the folks in San Diego."
15. "The process is very time-consuming."

The survey results and comments are consistent with the pathologies proposed by this researcher. The Best Value Source Selection process is very paperwork intensive, time consuming, and difficult to manage. While it seems to result in a better product or service for SWDIV's customers, it imposes a greater administrative burden on the acquisition activity, which ultimately results in increased acquisition costs. Also, in every case, the respondents have participated in TEB/SSBs where one or more of the board members were required to travel to participate.

Lastly, while nearly all of the respondents point out weaknesses/negatives in the process, nearly all believe that the tools that they currently have available to them to perform source selection are "adequate." This makes sense if (1) they are not aware that there are tools available that can assist them with these issues, or (2) they believe that the "tools" that they currently have do not assist in the process; therefore, additional tools would not be helpful. Due to time constraints, this research does not attempt to quantify the actual cause of this apparent discrepancy. However, for the purposes of this thesis, it is assumed that lack of awareness of the available tools is the primary cause of this apparent discrepancy.

Based on these survey results and anecdotal evidence, this research demonstrates that there are several potential pathologies in the current source selection process at SWDIV. Specifically, this research demonstrates that two process pathologies associated with the Best Value Source Selection process within SWDIV are: (1) the TEB/SSB chairperson's ability to manage, collect, and consolidate the volumes of source selection material (proposals, individual evaluations, past performance reports, etc.); and (2) the physical limitations of having to sequester a TEB/SSB in one location to perform a source selection evaluation in a secure and controlled environment. These pathologies appear to be perfect candidates for radical process innovation through the use of knowledge-based systems to assist the contract specialist in their document-composition activities, in accordance with Dr. Mark Nissen's research. (Nissen, 1997) All of the indicators point to the fact that, given a relatively modest investment in the appropriate IT enabler, a high degree of leverage should be achievable to capitalize on a clear innovation

opportunity and realize a large return on investment. Dr. Nissen's research will be reviewed in greater detail in Chapter III, section A.1.

B. PROCESS INNOVATION

1. Innovation versus Improvement

Process improvement is a term used quite loosely in business circles. Process improvement has its roots in the Total Quality Management (TQM) movement of the 1980's. Improvement, or continuous improvement, describes an evolutionary change method that tends to be limited in scope to relatively modest performance gains. (Davenport, 1993) This change methodology is criticized by some as a system of simply "paving the cowpaths." (Hammer, 1990) In other words, process improvement takes a broken, outmoded process framework, and "improves" the process within the existing framework. This change methodology often results in gradual process improvement over time, but is ultimately limited by the process framework in which the process operates.

Process innovation also has its roots in the TQM movement and other such approaches. However, in contrast to process improvement, process innovation represents a more integrated, holistic and aggressive change approach than process improvement, and seeks quantum, order-of-magnitude performance improvement. (Davenport, 1993) Process innovation involves the radical redesign of business practices. Process innovation requires one to step back from the overall process and analyze it in its entirety to realize an order-of-magnitude level of improvement. (Davenport, 1993, pg. 10)

Davenport differentiates process innovation from process improvement along several dimensions, as shown in Table 1. Process innovation seeks a much larger level of change than process improvement. If process innovation means performing a work activity in a radically new way, process improvement involves performing the same business process with slightly increased efficiency or effectiveness. (Kaminski, 1996, pg. 10) There are other important differences between these two approaches. These differences include the locus of participation in organizational change, the importance of process stabilization and statistical measurement, the enablers and nature of change, and

the degree of organizational risk. (Davenport, 1993, pg. 11) These differences are summarized in Table 1.

	Improvement	Innovation
Level of Change	Incremental	Radical
Starting Point	Existing Process	Clean Slate
Frequency of Change	One Time/Continuous	One Time
Time Required	Short	Long
Participation	Bottom-up	Top Down
Typical Scope	Narrow within Functions	Broad, Cross Functional
Risk	Moderate	High
Primary Enabler	Statistical Control	Information Technology
Type of Change	Cultural	Cultural/Structural

Table 1. Improvement versus Innovation. After Ref. Davenport, 1993

The implications for the use of electronic, or information technology, enablers as a catalyst for process innovation are immense. A computing environment that facilitates workflow and provides mechanisms for accessing shared data resources allows organizations to achieve dramatic productivity gains. In addition, as a consequence of the new automation capabilities and the productivity improvements, an organization can redirect limited resources and rethink its business practices. (Hudson, 1998) Hudson illustrates the potential for process innovation through the use of electronic enablers with the case of the U. S. Patent and Trademark Office's use of electronic data interchange (EDI) technology and the resulting reduction in their procurement process cycle time. The U. S. Patent and Trademark Office licensed an off-the-shelf procurement application to integrate procurement, finance, and suppliers through EDI, create shared data resources, and provide workflow automation. (Erwin, 1995)

The results are truly stunning. Procurement speed and productivity increased by creating a paperless process. Processing time from request to purchase order decreased by 50 percent! With the implementation and use of EDI technology, Request for

Quotations (RFQs) are routinely left open for only two to three days versus two weeks prior to the use of EDI. (Erwin, 1995) This example demonstrates how the effective integration of information technology and process reengineering provides a powerful tool for creating agile, productive, and efficient organizations. (Hudson, 1998)

2. Process Innovation Framework

As businesses strive to streamline their processes and increase efficiency, many different business tools have been developed to assist them in their efforts. In recent years, the TQM and reengineering movements, as well as the rise in popularity of the ISO 9000 series of certifications, have served to shift the focus of businesses and business writers more toward processes rather than products. As a result, process analysis for innovation became one of the primary tools that businesses use to refine and enhance their capabilities. There are a variety of process innovation tools presented in the popular business literature. For the purposes of this thesis, Davenport's Process Innovation Framework (PIF) is used. (Davenport, 1993) As shown in Table 2, Davenport's PIF is based on five high-level steps: (1) identifying processes for innovation, (2) identifying change enablers, (3) developing a business vision and process objectives, (4) understanding and measuring existing processes, and (5) designing and prototyping the new process. (Davenport, 1993) These five phases are generally outlined below. A more detailed discussion of these steps is provided in Chapters III and IV.

a. Phase I: Identify Processes for Innovation

Phase one consists of *identifying and prioritizing* key processes for analysis. This phase employs a high-level approach. The *major processes* of an organization are identified with the objective of broadly defining usually no more than 20 processes. The *boundaries* of each of the identified processes are determined and the *health* of each process is assessed. The *strategic relevance* of each process is determined, relative to the overall goals of the organization. Next, the *corporate culture and political pressures* associated with the identified processes are evaluated (this information becomes critical in the later phases).

Based on the outcome of these steps, each process is *prioritized* or *ranked* for its potential for innovation. The process that is most closely aligned to the strategic goals of the business, has the most potential pathologies, and has the best cultural and political support for change will be given the highest priority for process innovation. (Davenport, 1993, pp. 27-36)

Phase I	**Identify Process for Innovation**
	Enumerate Major Processes
	Determine Process Boundaries
	Assess Strategic Relevance
	High Level Judgments of the Health of Each Process
	Qualify the Culture and Politics
Phase II	**Identify Change Levers**
	Identify Potential Technological and Human Opportunities for Process Change
	Identify Potential Constraining Technology and Human Factors
	Research Opportunities in Terms of Application to Specific Processes
	Determine which Constraints will be Accepted
Phase III	**Develop Process Visions**
	Assess Existing Strategy for Direction
	Consult with Customers for Performance Objectives
	Benchmark for Targets and Examples of Innovation
	Formulate Process Performance Objectives
	Develop Specific Process Attributes
Phase IV	**Understand Existing Processes**
	Describe the Current Process Flow
	Measure the Process in Terms of New Process Objectives
	Assess the Process in Terms of the New Attributes
	Identify Problems with the Process
	Identify Short-Term Improvements in the Process
	Assess Current Information Technology and Organization
Phase V	**Design and Prototype of the New Process**
	Brainstorm Design Alternatives
	Assess Feasibility/Risk and Select the New Process Design
	Prototype the New Process Design
	Develop a Mitigation Strategy
	Implement New Organizational Structures and Systems

Table 2. Process Innovation Framework Outline. After Ref. Davenport, 1993

b. Phase II: Identify Change Levers.

Phase two is perhaps the most difficult and critical of the five phases. Phase two begins with the identification of potential change levers that are currently available to the organization. Change levers can be *technological* or *human*. Both technological and human change levers should be explored. Once the change levers are identified, opportunities to employ the levers are considered. During this phase, *constraints* are identified that have the potential to hinder the innovation process. These can include, but are not limited to, the corporate culture and organizational politics (as described in phase one).

(1) Technological Change Levers. Information technology (IT) has the potential to greatly contribute to process innovation in a number of ways. Davenport specifies nine areas where IT can enable innovation. (Davenport, 1993, pg. 51) These areas are highlighted and defined in Table 3. The specific means by which these business objectives are achieved is also provided in Table 3 and discussed below.

Impact	Example	Explanation
Automation	Improve speed integrity and quality of work	Eliminates human labor from a process
Information	Enhanced work coordination	Captures process information for purposes of understanding
Sequence	Allows for parallel work	Changes process sequence, or enabling parallelism
Tracking	Close monitoring of tasks and processes	Closely monitors process status and objects
Analysis	Data storage allows for analysis	Improves analysis of information and decision making
Geography	Networks allow for transfer of information	Coordinates processes across distances
Integration	Many people can work on the same project	Coordination between tasks and processes
Intellect	Preservation of corporate knowledge	Captures and distributes intellectual assets
Disintermediation	Decreases person to person interaction	Eliminates intermediaries from a process

Table 3. The Impact of Information Technology on Process Innovation. Developed by Researcher.

The most obvious use of IT is automation. Automation of tasks can improve the metrics of speed, quality, and integrity of work. The most commonly recognizable benefits of automation are its ability to eliminate human labor and produce a more structured, or standardized, process. (Kaminski, 1996) Technology can also be used to augment human labor, rather than eliminate it. Information and documents that are routed electronically are generally more secure, maintain greater data integrity, and pass from person to person more quickly. The electronic transfer and storage of information also facilitates the gathering of process metrics, which can be analyzed for process improvement opportunities, and are critical for measuring the success or failure of any process change.

Another benefit of IT is the sequencing of information. Databases allow for parallel work to occur (e.g. more than one person or organization accessing and manipulating data simultaneously), which provides opportunities for the sequencing of tasks and reductions in cycle time. The tracking of information is also greatly enhanced through the use of IT. This characteristic of electronic data transfer allows an organization's managers to more closely monitor the execution of tasks within a process. Information and data retained within a database are more reliably maintained than with hard copies, and are more readily and easily assessable.

A key benefit of IT, which is particularly relevant to this thesis, is the ability to network. Electronic networks allow for the transfer and sharing of information and data among geographically dispersed organizations, such as SWDIV. Networks and "groupware" technologies make it possible, for the first time in human history, for a number of people to work together in real time on a single project in separate physical locations. This is a very powerful enabling capability of IT. The final IT characteristic Davenport identifies is disintermediation. IT has the potential to cut a substantial number of stops or *handoffs* out of a process. As the number of person-to-person handoffs within a process decreases, reductions in time and fewer errors caused by human interaction are realized.

Every process identified in phase one is analyzed and evaluated in terms of its potential innovation opportunities as described in these nine areas. Technological constraints are also identified in this phase. Technological constraints may include legacy systems. Legacy systems are also identified and evaluated for potential innovation opportunities. However, it should be noted that when a process extends across organizational boundaries into customer and supplier organizations, it might be impossible to assume a clean slate of systems support. (Davenport, 1993, pp. 37-70)

(2) Human Change Levers. Although Davenport does not spend as much time on human change levers as he does on technological change levers, he does emphasize the importance and potential impact of human change levers, and cautions not to discount them. Davenport defines human change levers as both organizational and human resources. Organizational enablers relate to the *structure* of the organization. An example of organizational change that enables innovation is structuring the process around teams. Team structures generally improve the quality of organizational output and cross-functional teams can enhance the range of skills of its members. Human resources change levers relate to the *culture* of the organization, and can lead to higher productivity and greater levels of personal satisfaction. Empowering employees to make decisions about a process is an example of a human resources change lever that can increase initiative and reduce cycle time. (Davenport, 1993, pp. 95-116)

When all potential change levers are identified, an analysis of how they affect the process to be innovated is performed. The result of this analysis is a set of change levers, both technological and human resources that are used to innovate the process. Along with these change levers, potential constraints that the organization may have to accept, such as eliminating a costly legacy system, are identified as well. The final outcome of phase two is a set of tools that are available to the organization to enable the innovation of the process, as well as the potential obstacles to that innovation.

c. *Phase III: Develop a Business Vision*

Process innovation is meaningful only if it improves an organization in ways that are consistent with its strategy, or *vision*. Radical change cannot be accomplished without clear direction. In phase three, a vision for the process is developed. Information is collected from various sources, and performance objectives for the new process are established. First, the overall business strategy is assessed and the direction in which the organization wishes to go is defined. From this direction, new process objectives are established.

To truly capitalize on all potential innovation opportunities, all of the process stakeholders (customers, suppliers, employees, and others) are consulted. This is not simply an exercise that is internal to the organization. The customers of the process are consulted to better determine what the performance objectives of the innovated organization *should* be. Suppliers are consulted for their unique insight into the process. As a quasi-external partner in the process, suppliers have a unique perspective of the process from within and without the organization.

Benchmarking process performance against similar processes in high-performance organizations also aids in refining performance objectives and helps to generate redesign alternatives. These comparisons help to identify realistic *process objectives* and *target characteristics* for the organization to match or exceed. Process objectives include the overall process goal, specific type of improvement desired, and a numeric target for the innovation, as well as the time frame in which the objectives are to be accomplished.

Next, *process attributes* are developed. The process attributes are the descriptive, nonquantitative adjuncts to process objectives. Process attributes constitute a vision of process operation in a "future state." They address both high-level process characteristics and specific enablers. Process attributes may involve IT, organizational, and/or human resources factors. All of these factors are used to develop the vision for the organization. The creation of a *process vision* relies on assessing the organization's strategy, gathering external inputs into the process design, and translating this

information into specific process objectives and attributes. The process vision is determined based on what is necessary to achieve as a result of process innovation from a business standpoint, rather than what might seem reasonable or accomplishable. A vision need not be unrealizable, but by definition must push the limits of what is possible, if quantum improvements are to be realized. (Davenport, 1993, pp. 117-136)

d. Phase IV: Understand and Measure the Existing Process

It is important to understand the existing process before designing a new one. The primary goal of phase four is to ensure that the current process is thoroughly understood. As part of this effort, the *process workflow* is mapped as it is currently being performed. This existing process workflow map is used as the *baseline* for the innovation of the process, so it is assessed in terms of the performance objectives developed in phase three. Any *deficiencies* or *pathologies* associated with the current process are identified, and any short-term fixes currently available to correct these pathologies are noted. The final product of this analysis is a clearly understood process as it currently exists within the organization, including any supporting IT and human resource assets. This analysis includes how the process fits within the current organizational structure and culture. (Davenport, 1993, pp. 137-152)

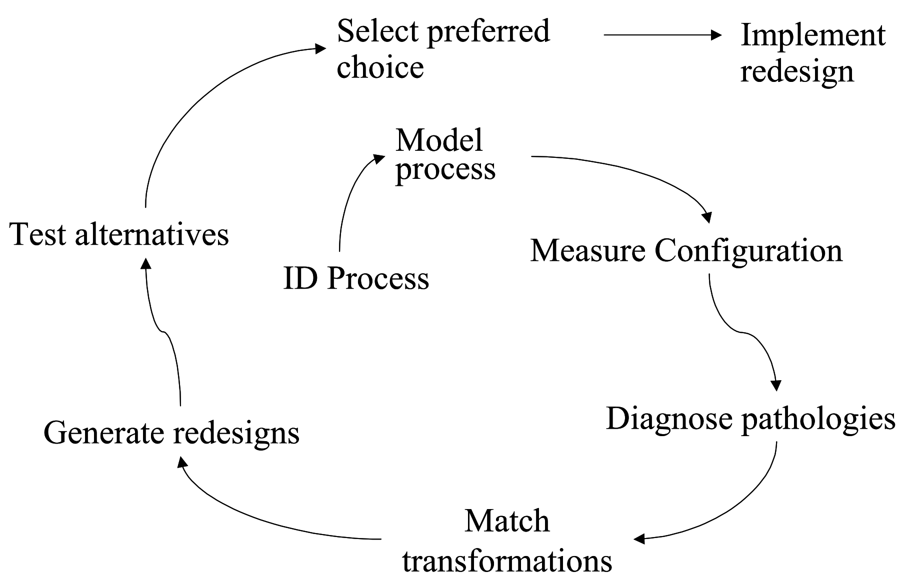
e. Phase V: Design and Prototype the New Process

The final phase of the PIF is to design and prototype the new process. First, Davenport recommends that all of the stakeholders (identified in phase three) brainstorm potential redesign alternatives based on the results of the preceding phases. Davenport notes that the success or failure of this effort will turn on the particular people that are gathered for this purpose. Once all of the potential alternatives are identified, they are evaluated for risk, feasibility, and overall payoff potential to the organization. Based on this evaluation, a new process design is selected for implementation. A prototype is developed for the selected design to test the new process. Prototyping must be treated as a learning activity. Many iterations may be required to achieve a workable process alternative. After a successful testing period, the new design is migrated into the organization. This migration process continues until the new system is fully

implemented, and the innovation/redesign process is complete. (Davenport, 1993, pp. 153-163)

3. Knowledge-Based Organizational Process Redesign (KOPeR)

This thesis utilizes Knowledge-Based Organizational Process Redesign (KOPeR), a knowledge-based redesign tool used for the purpose of process innovation, to identify pathologies in the Best Value Source Selection process. KOPeR captures process redesign knowledge from the reengineering literature and practice through the use of twin taxonomies and production rules, and supports a measurement-driven redesign method. (Nissen, 2001) Using measurement–driven inference, this intelligent redesign information technology tool automates three key activities for process redesign: process measurement, pathology diagnosis, and transformation matching. A high-level redesign method is diagrammed below.



By utilizing KOPeR, these key intellectual activities can be automated resulting in a quicker, more accurate diagnosis of the process and its pathologies. (Nissen, 2001) KOPeR-supported redesign enables new reengineering efficiencies in terms of direct automation effects and indirect knowledge effects. (Nissen, 1998)

While KOPeR is proven in the laboratory to redesign commercial processes from the reengineering literature, and is employed in the field to assist in the redesign of operational procurement processes, this research utilizes what is known as “KOPeR-lite.” (McCarthy, 1998) KOPeR-lite represents a re-implementation of core KOPeR functionality for the PC environment and Web infrastructure. Although KOPeR-lite is not as robust as KOPeR, it has the capability to effectively demonstrate distributed Web delivery of intelligent process-innovation expertise and problem solving through a Web-enabled, easily accessible knowledge-based system (KBS). (Nissen, 2001) The functionality and ease-of-use that KOPeR-lite affords the user is essential for this research, given its scope and logistical challenges.

KOPeR uses a graphical representation of a process to obtain measurements. A sample of these KOPeR measurements with definitions is provided in Table 4. KOPeR uses these measures to identify process pathologies and provide redesign advice. This

Measure	**Graph Based Definition**
Process Length	Number of Steps in Process Path
Process Size	Number of Nodes in Process Model
IT Support	Number of IT-Supported Attributes
IT Communication	Number of IT-Communication Attributes
Process Handoffs	Number of Inter-Role Changes
IT Automation	Number of IT-Automation Attributes
Process Feedback	Number of Cycles in Graph

Table 4. KOPeR Measurements. From Ref. Nissen, 2001.

thesis takes advantage of the KOPeR tool to help define the Best Value Source Selection process pathologies, analyze those pathologies, and formulate recommendations for innovative process redesign based on the Davenport model. (Davenport, 1993)

C. SUMMARY

The acquisition workforce is getting smaller; however, its workload is not decreasing at a rate commensurate with its decline. In some cases, this has led to severe shortages in resources and the inability of some acquisition organizations to adequately service their customers. This phenomenon appears not only at the DoD level, but also at the Navy, NAVFAC, and Southwest Division levels of the acquisition community as well. This trend is not likely to reverse itself anytime in the foreseeable future.

SWDIV's current organizational structure is divided into geographic teams or Area Focus Teams (AFTs), which provide "cradle to grave" facilities support to its customers for each of its major business lines. However, these "cradle to grave" capabilities, while available within a given AFT, are not typically provided by a single office. The AFTs typically consist of pre-award and post-award offices that are not physically co-located. Given the regulatory and procedural requirements that source selection boards are made up of members of various technical and contractual disciplines, it is often not possible to convene a SSB without requiring that some members of the board be sequestered away from their offices, thus hurting productivity.

Competitively negotiated source selection procedures are primarily governed by FAR Part 15, Contracting by Negotiation. FAR Part 15 underwent a major rewrite, which became effective on 1 January 1998. The new FAR Part 15 rules emphasize that the complexity of competitive negotiation procedures is to be minimized, so long as the process is fair and results in the best value to the government. The various rule changes in FAR Part 15, as well as many other recent regulatory reforms, are designed to allow the Contracting Officer more flexibility and discretion in the decision making process, and to bring the process of contracting by negotiation more closely in line with commercial practices.

This research demonstrates two potential process pathologies associated with the current Best Value Source Selection process within SWDIV. These two shortcomings are: (1) the TEB/SSB chairperson's ability to manage, collect, and consolidate the volumes of source selection material; and (2) the physical limitations of having to

sequester a TEB/SSB in one location to perform a source selection evaluation in a secure and controlled environment. These pathologies appear to be perfect candidates for radical process innovation.

Process innovation represents a more integrated, holistic, and aggressive change approach than process improvement, and seeks quantum, order-of-magnitude performance improvement. Process innovation involves the radical redesign of business practices, while process improvement has been referred to by some as "paving the cow paths." Process innovation requires one to step back from the overall process and analyze it in its entirety to realize an order-of-magnitude level of improvement.

There are a variety of process innovation tools presented in the popular business literature. However, for the purposes of this thesis, Davenport's Process Innovation Framework is used. Davenport's Process Innovation Framework is based on five high-level steps: (1) identifying processes for innovation, (2) identifying change enablers, (3) developing a business vision and process objectives, (4) understanding and measuring existing processes, and (5) designing and prototyping the new process.

This thesis utilizes Knowledge-Based Organizational Process Redesign (KOPeR), a knowledge-based redesign tool used for the purpose of process innovation, to identify pathologies in the Best Value Source Selection process. Using measurement–driven inference, this intelligent redesign information technology tool automates three key activities for process redesign: process measurement, pathology diagnosis, and transformation matching. By utilizing KOPeR, these key intellectual activities can be automated resulting in a quicker, more accurate diagnosis of a process and its pathologies.

In the chapter that follows, this thesis applies Davenport's Process Innovation Framework methodology to analyze and redesign the Best Value Source Selection process. In order to realize the quantum level of improvement that is desired, all steps and functions of the Best Value Source Selection process are identified, understood, and evaluated for relative value in acquiring goods and services using the Best Value Source

Selection process. Process innovation of the Best Value Source Selection process has the potential to effect quantum, order-of-magnitude improvements in performance.

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III. METHODOLOGY AND PROCESS

A. METHODOLOGY OF RESEARCH

The research for this thesis includes a literature review of books, manuals, regulations, the World-Wide Web, periodicals, SWDIV Standard Operating Procedures (SOPs), and other resources. A limited number of research papers are presented in this thesis, as they are particularly germane to this research. However, the research conducted for this thesis reveals no relevant previous research specific to the Best Value Source Selection process, or more specifically as it applies to SWDIV and its current process.

A brief overview of a case study conducted by Dr. Mark Nissen, regarding the DoD Justification and Approval (J&A) process, is provided. This particular field study is selected because the J&A process is remarkably similar to the current SWDIV Best Value Source Selection process, with a similar process size, the number of organizational roles, the high level of process parallelism, the low level of IT support, communication, and automation, and high level of process friction. Also, this field study utilizes KOPeR to recommend design alternatives, as this thesis does with the Best Value Source Selection process.

Lastly, this section provides a definition of the current SWDIV Best Value Source Selection process in specific terms through the duties and responsibilities of the various participants, as defined and described by the SWDIV SSP Model. By understanding the duties and responsibilities of the various process participants, one can better understand the "as is" condition of the process, the potential process pathologies, and the requirements for the redesigned process. A high-level outline of the process is provided in section A.3 below, while a more detailed process model is provided in sections B.1 and B.4 of this chapter.

1. Overview of Previous Research

The body of knowledge specifically dedicated to studying the Best Value Source Selection Process and potential improvements to the process through the use of IT is very limited. However, some more general research has been accomplished that takes a

broader look at the procurement process, and the use of software agents to reengineer that process. That research is briefly summarized below.

Jerome Hudson's Masters thesis, entitled "Software Agents and the Defense Information Infrastructure: Reengineering the Acquisition Process," studies the effective use of advanced IT products as enablers of process innovation within the Defense Department's procurement system. (Hudson, 1998) His research focuses on using a software-based system as an IT enabler to redesign the procedures and processes for Simplified Acquisition Procedures (SAP). These software agents are used to identify and eliminate both software and human-based non-value-added activities within the SAP process. While Mr. Hudson's research focuses more on the process than the product, and did not use IT as the direct enabler of the innovation, but rather as the tool to identify the pathologies within the given process, it nonetheless reinforces the theorem that many Defense Department acquisition processes can and should be innovated and streamlined through the use of IT, and that measurable improvements can be realized as a result.

Thomas H. Davenport's book, entitled "Process Innovation: Reengineering Work Through Information Technology," presents what Davenport refers to as the "Process Innovation Framework" that fuses IT and human resource management to dramatically improve business performance. (Davenport, 1993) The cornerstone of Davenport's framework is IT, which he argues is a largely untapped resource, but critical "enabler" of process innovation. However, Davenport strongly cautions against the use of IT to "pave the cow paths," or simply automate a "broken" process, but rather argues that IT should be the enabler of true process innovation and change. Davenport defines process innovation as "combining the adoption of a process view of the business with the application of innovation to key processes." (Davenport, 1993, pg. 1) According to Davenport, a process is "a specific ordering of work activities across time and place, with a beginning, and end, and clearly identified inputs and outputs." (Davenport, 1993, pg. 5) Davenport defines innovation as "performing work in a radically new way." (Davenport, 1993, pg. 10) He differentiates innovation from improvement, in that innovation deals with exponential change, while improvement seeks a lower level of change. (Davenport,

1993, pg. 10) Put simply, Davenport advocates the selective application of IT as the enabler for process innovation resulting in large gains in efficiency and productivity.

Davenport's work is relevant to this research because Davenport concludes, "no single business resource is better positioned than IT to bring about radical improvement in business processes." (Davenport, 1993, pg. 17) This research looks at ways to leverage IT and selectively apply it to the source selection process that was recently changed by the FAR 15 Rewrite to realize radical improvement in the process, as Davenport describes in his research.

Teresa F. McCarthy's Masters thesis, entitled "Innovating the Standard Procurement Process," studies the Standard Procurement System or SPS. She uses Davenport's "Process Innovation Framework" (Davenport, 1993, pp. 23-26) to analyze SPS for innovation opportunities. (McCarthy, 1998) Ms. McCarthy's research indicates that simply automating a process may not bring about what she refers to as "quantum level" improvements in performance. Her research is similar to Hudson's in that IT is used as the tool to identify the pathologies within the SPS process. However, this research again reinforces the theorem that Defense Department acquisition processes (in this case the SPS) can be innovated through the proper application of IT, resulting in "quantum level" improvements.

The seminal study, with regard to the subject of this paper, is by Dr. Mark Nissen of the Naval Postgraduate School. Dr. Nissen's paper, entitled "Reengineering the RFP Process Through Knowledge-Based Systems," reiterates the fact that DoD acquisition resources are declining and that "dramatic" improvement in DoD's business practices is critical to its future success. He also notes that, "while the current reengineering practice (Davenport, 1993) guides against process innovation based solely on IT-based transformations, IT continues to represent the central enabling technology for process redesign." (Nissen, 1997, pg. 92) This is consistent with this paper's theorem that the recently reengineered Best Value Source Selection process at SWDIV can be radically innovated through the use of IT as the enabler of that innovation.

Dr. Nissen indicates that, according to his research, there are three basic IT-based enabling technologies: (1) procurement workflow systems (PWS), (2) expert review systems (ERS), and (3) knowledge-based composition systems (KBS). (Nissen, 1997, pg. 92) Dr. Nissen ran sophisticated computer-based simulations of the application of each of these IT-based enabling technologies to the "standard" RFP process and found that while PWS and ERS systems effected only modest cycle time improvements (28% and 33% respectively) and cost improvements (0% and 11% respectively), KBS systems used for RFP document composition improved cycle time performance by 67% and reduced cost by 52%! (Nissen, 1997, pg. 96)

Based on his findings, Dr. Nissen questions the notion that major improvements in performance and cost require the most advanced technologies, given that KBS systems are often not highly sophisticated. He also found that "the contract specialist's document-composition activities offered the greatest potential for improvement in terms of automation." (Nissen, 1997, pg. 96) Lastly, Dr. Nissen states that, "[these findings] highlight an exciting opportunity to further explore such composition [technologies]." One example he highlights for potential future research is "using KBS technologies to integrate the government RFP and contractor-proposal processes." (Nissen, 1997, pg. 98) Dr. Nissen's findings are consistent with the theorem of this paper, in that document-composition technology is able to radically innovate the Best Value Source Selection Process because of the high degree of leverage associated with the automation of composition activities.

2. Case Study

The following case study is taken from Appendix (B) of Dr. Mark Nissen's article "Redesigning Reengineering through Measurement-Driven Inference." (Nissen, 1998) This case concerns the Justification and Approval (J&A) process, which is required for all sole-source or "other than full and open competition" procurements within the Federal government, and is expressly required by regulation. This particular case is selected because the J&A process is remarkably similar to the current SWDIV Best Value Source Selection process, with a similar process size, the number of organizational roles, the

high level of process parallelism, the low level of IT support, communication, and automation, and high level of process friction. Also, like the Best Value Source Selection process, the J&A process is identified as an important, but highly dysfunctional, process within the acquisition community. These factors are useful heuristics for identifying processes that are good candidates for redesign. (Nissen, 1998, pp. 509-534)

A top-level baseline of the J&A process is provided graphically as Figure 7 below.

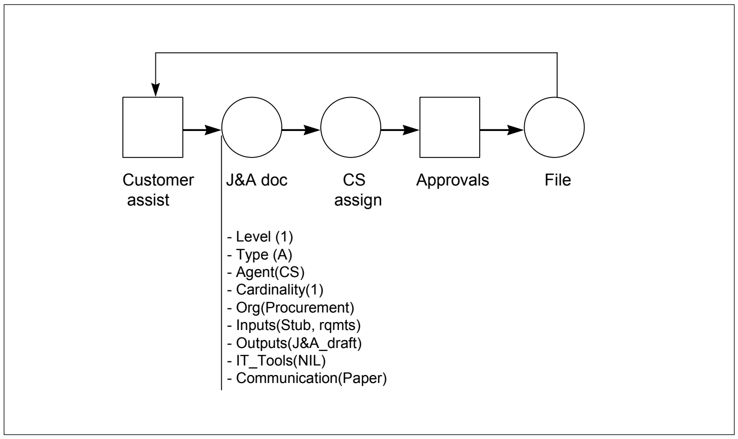

Figure 7. J&A Baseline Process Model. From Ref. Nissen, 1998

At this level, the process is comprised of five basic tasks: 1) Customer assistance, 2) J&A documentation, 3) Contract Specialist (CS) assignment, 4) Approvals, and 5) J&A filing. As Figure 7 clearly illustrates, the "as is" J&A process is entirely sequential or linear. The baseline J&A process also utilizes no appreciable IT support, communication, or automation. Although these process attributes tend to jump out as probable process pathologies, to correctly analyze the entire scope of possible process pathologies, the process's configuration measurements are established so that they may be input into the KOPeR application. These measurements are: 1) Process size, 2) Process length, 3) Handoffs, 4) Feedback loops, 5) IT support, 6) IT communication, and 7) IT automation. The definitions of each of these measures are provided below:

1. Process size: The number of process activities.
2. Process length: The length of the longest (critical) path.

3. Handoffs: The number or inter-agent transfers of work.
4. Feedback loops: The number of quality/feedback loops.
5. IT Support: The number of process tasks supported by information technology.
6. IT Communication: The number of process communications supported by information technology.
7. IT Automation: The number of process tasks automated by information technology.

(Nissen, 2001)

Once these measures are established, they are fed into the KOPeR application for diagnosis. KOPeR produces a list of diagnoses based on pre-established rules, which are derived from process-type and industry norms. (Nissen, 1998, pp. 509-534) Table 5 indicates the diagnoses that are produced when the J&A process measures are fed into KOPeR.

Configuration Measure	Value	Diagnosis
Process Size	31	Small Process
Organizational Roles	7	Job Specialization
Parallelism	1.00*	Sequential Process Flows
IT-Support Fraction	0.03	Manual Process
IT-Communication Fraction	0.00*	Paper-Based Process
IT-Automation Fraction	0.00*	Labor-Intensive Process
Feedback Fraction	0.35	Review-Intensive Process
Handoffs Fraction	0.58	Process Friction

* denotes theoretical extremes for a measure

Table 5. J&A Configuration Measurements and Diagnoses. From Ref. Nissen, 1998

These diagnoses indicate that the baseline J&A process is sequential (e.g. has a low degree of parallelism), highly manual, completely paper-based, very labor-intensive, and is very review-intensive in nature, which is indicated by the feedback fraction (0.35). Also, the handoff fraction (0.58) indicates that the process has a high degree of friction.

These fractional measures are provided by KOPeR to “normalize” raw counts (such as the number of feedback loops or handoffs) by process size to allow for the comparison of various processes and process alternatives. (Nissen, 1998, pp. 509-534) A summary of the KOPeR-recommended design alternatives is provided in Table 6.

Diagnosed Pathology	Recommended Transformation	KOPeR Redesign Alternative
Sequential process flows + review-intensive process	De-linearize (approvals)	1. Concurrent reviews
Sequential process flows + review-intensive process	De-linearize (approvals)	**2. Joint reviews**
Manual process + paper-based process + process friction	Shared database + e-mail	3. E-document infrastructure
Manual process + paper-based process + process friction + labor-intensive process	Workflow management system	**4. Contracts workflow system**
Job specialization + process friction	Case manager	5. J&A case team
Job specialization	Empowerment (3)	6-8. CS and KO job enlargement

Note: **bold** denotes “preferred” redesign alternative

Table 6 Redesign Alternatives. From Ref. Nissen, 1998.

These redesign alternatives are narrowed to: 1) Joint reviews, and 2) Contracts workflow system. Typically, the process of narrowing and selecting redesign alternatives is done through a series of simulations, which are used to assess the relative importance of the redesign alternatives. (Nissen, 1998, pp. 509-534) However, in this case, several process experts are enlisted to refine the set of redesign alternatives that are generated by KOPeR. The criteria that these experts use to evaluate the various recommendations are process feasibility, implementability, and projected benefit. (Nissen, 1998, pp. 509-534) The simulated cost and cycle time of each redesign alternative is compared with those of the baseline J&A process. (This is fundamentally the same approach used by this thesis to evaluate redesign alternatives for the Best Value Source Selection process in Chapter IV.)

Once the process experts narrow the possible redesign alternatives to *joint reviews* and *contracts workflow system*, a commercial software package is employed to simulate the performance of the J&A baseline and each “preferred” redesign alternative to determine which alternative is preferable and what the expected reductions in cost and cycle time are from each. (Nissen, 1998, pp. 509-534) The results from the simulation are provided in Table 7.

Redesign Alternative	Cost Reduction	Cycle Time Reduction
Joint Reviews	28%	67%
Contracts Workflow System	nil	67%

Table 7. Redesign Simulation Results. From Ref. Nissen, 1998

Table 7 illustrates that the *joint reviews* simulation result in a 28% reduction in cost over the baseline process, primarily due to a reduction in rework made possible by the joint-meeting format. Also, this redesign alternative results in a simulated reduction in cycle time of 67%. Part of this reduction is attributed to the reduction in rework; however, the primary driver of reduced cycle time is the concurrent review that is made possible in this particular model. (Nissen, 1998, pp. 509-534) The *contracts workflow system* simulation results in the identical cycle time reduction as the joint reviews redesign alternative. However, the contracts workflow system simulation shows no appreciable reduction in cost. The reduction in cycle time for this redesign alternative is associated with eliminating the J&A paper handoffs. Also, the transportation time among process activities is greatly reduced as a result of implementing IT-based process enablers. The lack of cost savings under this redesign alternative model is attributable to the fact that the process tasks themselves remain relatively unchanged within the system. (Nissen, 1998, pp. 509-534) This is an example of using IT to successfully expedite an otherwise flawed process. Alternatively, if the process itself is innovated, and then IT is successfully applied to the innovated process, orders of magnitude improvements are typically realized, versus the two-thirds improvements reflected in these redesign alternatives.

Lastly, it is important to note that these redesign alternatives are generated independently. In other words, KOPeR is incapable of assimilating elements of various redesign alternatives to recommend them in combination. (Nissen, 1998, pp. 509-534) Therefore, one may choose to combine elements of two or more of the KOPeR-recommended redesign alternatives to synthesize an alternative that may very well produce even more dramatic results in cost and cycle-time reductions. However, these combinations can prove difficult to accurately simulate.

Not all of the details and nuances of this case are provided here. However, the purpose of this case is not to analyze the details of the J&A process pathologies and its potential redesign alternatives. Rather, this case is presented to provide a foundation and to demonstrate how a process very similar to the Best Value Source Selection process can be analyzed using Davenport's Process Innovation Framework, how redesign alternatives can be generated and tested using an intelligent agent such as KOPeR, and how dramatic improvements can be realized by implementing a redesign alternative that is feasible, implementable, affordable and palatable to an organization. This is the goal of this thesis with regard to the SWDIV Best Value Source Selection process.

3. Define the Current Best Value Source Selection Process in Specific Terms

The current Best Value Source Selection process at SWDIV is outlined in the SWDIV Source Selection Plan Model. (SWDIV SSP Model) The first step in the source selection process is to develop a Source Selection Plan (SSP). The purpose of this SSP is to state the criteria to be used for selection of a successful responsive, responsible offeror whose proposal conforms to the solicitation and is considered the most advantageous to the government considering both price and other factors combined.

Additionally, this plan provides guidance to the members of the source selection team in the evaluation of proposals submitted under the competitively negotiated acquisition. The source selection team generally consists of the Source Selection Authority (SSA), the Procuring Contracting Officer (PCO), the Technical Evaluation Board (TEB) and, if established as a separate entity, the Source Selection Board (SSB). In accordance with FAR Part 15, a source selection may be conducted with either

separate technical and price evaluation boards, or with a single board. Also, the source selection process may or may not allow for oral presentations. This thesis focuses on the dual boards, written proposals process format (i.e. no oral presentations), as it is the most commonly used format at SWDIV. The current Best Value Source Selection process is perhaps best described through the duties and responsibilities of the various participants, as defined and described by the SWDIV SSP Model.

a. Duties and Responsibilities of the SSA:

1. Establish an evaluation team, tailored for the particular acquisition, which includes appropriate contracting, legal, logistics, technical, and other expertise to ensure a comprehensive evaluation of offers.
2. Approve the SSP.
3. Ensure that the entire source selection process is conducted in accordance with the SSP and applicable regulations, which are consistently reflected in the factors and subfactors listed in the solicitation.
4. Provide evaluation boards or panels with appropriate guidance and instructions as may be necessary for the conduct of the evaluation and source selection process.
5. Consider the recommendations of the advisory boards or panels in making a selection of the proposal offering that represents the best value to the government.
6. Ensure that conflicts of interest, the appearance of conflicts of interest, and the premature or unauthorized disclosure of source selection information are avoided to the maximum extent practicable.

b. Duties and Responsibilities of the PCO (The PCO may be the same person as the SSA):

1. Serve as the focal point for inquiries from actual or prospective offerors, after release of the solicitation.

2. Ensure each person participating in the source selection process signs a Statement of Financial Interest and a Certificate of Non-Disclosure prior to starting any evaluation.

3. Receive and open proposals and review for conformance to the RFP prior to forwarding them to any evaluators (SSB/TEB). Specifically, the Contracting Officer or their representative should:

a. Review each proposal thoroughly to ensure that no item can be separated from the proposal during the evaluation period and be confused with material from another proposal for want of proper identification.

b. Check proposals for conformance to the RFP and ensure that all required submittal data is included. If a proposal is found to be deficient, the SSA (if different than the Contracting Officer) shall be informed by the Contracting Officer of the intended action to be taken.

c. Ensure that unopened price proposals are completely separated from the technical proposals. Price proposals are to be delivered to the chairperson of the SSB or SSA upon their request.

4. Review proposals for any conditional items. Any conditional item found in the proposal is brought to the attention of the SSA (if other than the PCO) who will be informed of the intended action to be taken.

5. Mark price proposals as "Procurement Sensitive – For Official Use Only" and store securely. This pricing information is not delivered to

the TEB, and is provided only to those individuals evaluating the price information (e.g., SSB/PCO/SSA).

6. Conduct, concurrent with the technical evaluation of proposals, a preliminary responsibility check for all offerors in order to preclude the possibility of selecting a non-responsible offeror. In the event that an offeror appears to be non-responsible, the SSA (if other than the PCO) is contacted and informed of the intended action to be taken.

7. Notify offerors promptly, in writing, when their proposals are excluded from the competitive range or otherwise eliminated from competition.

c. Duties and Responsibilities of the SSB and SSB Chairperson:

1. The SSB chairperson is responsible for ensuring the TEB and the SSB perform their duties in accordance with the SSP and applicable regulations. (Board membership should be in the range of three to five persons as a standard, and may include, but is not necessarily limited to, the Project Leader, Customer Representative, Contract Specialist, and Field Office Representative.) The chairperson:

a. Develops the SSP, submits the SSP to the SSA for approval, and provides general guidance and detailed instructions to the TEB.

b. Ensures each member of the SSB and TEB are briefed about their duties and responsibilities as board members in the solicitation process.

2. The SSB as a group:

a. Evaluates past performance information (PPI).

b. Receives briefings from the TEB chairperson on the acceptability or unacceptability of each technical proposal received by each of the qualified offerors.

c. Reviews proposals and validates the quality rating assigned by the TEB.

d. Determines whether clarifications (limited exchanges between the government and offerors) should occur if award without discussions is contemplated, including adverse PPI.

e. Conducts communications, if necessary, with offerors before the establishment of the competitive range. Control exchanges with offerors in accordance with FAR Part 15.306.

f. Receives and evaluates price proposals from the Contracting Officer.

g. Recommends the competitive range. The SSB makes a determination of those proposals that are: exceptional, highly acceptable, acceptable, marginal, or unacceptable. The SSB recommends which proposals are considered unacceptable after a careful analysis of the technical proposals and complete consideration of the corresponding price. Borderline proposals may be excluded from further consideration. The Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals. Proposers are advised in the solicitation of the possibility that the competitive range can be limited for purposes of efficiency.

h. Considers the relationship of price, past performance, and technical/management factors. Once the overall quality ratings of the proposals have been established, the SSB makes a determination if an award can be made without discussions, or recommends which proposals should be included in the competitive range.

i. Prepares the board report. The SSB shall prepare a report to the SSA analyzing the merits and deficiencies of each of the competitive proposals. This report is drafted in specific, factual terms. (For requirements under $30M, the SSB information may be documented in the Business Clearance Memorandum, in lieu of a separate report). Broad or general statements of a subjective nature and conjecture are to be avoided. A narrative comparison of all proposals in the competitive range is developed for each of the major evaluation factors. The report must clearly reflect that the evaluation and selection was conducted through a clearly defined procedure. One complete set of the contractor's proposal documents is submitted for each offeror. These include, but are not limited to, copies of contractors' proposals and copies of the RFP with all amendments and notices. Where, during negotiations, additional contact is made for any reason, copies of all board-generated correspondence to all offerors, and the replies from the firms in the competitive range, are also to be provided.

j. Is responsible for the preparation and processing of the pre-negotiation and post-negotiation business clearances.

k. Conducts discussions/negotiations as necessary. If the board determines that discussions are necessary, the board’s recommendations will be incorporated into the pre-negotiation business clearance and authorization received from the SSA. The pre-negotiation business clearance is approved before commencing discussions with all offerors in competitive range.

l. Re-evaluates the proposals. If discussions are conducted, copies of all board-generated correspondence to all offerors, and the replies from the firms in the competitive range are also provided. If revised technical data is received, proposals are

re-evaluated and the results are documented in an addendum to the pre-business clearance, which is included as an attachment in the post-business clearance. The judgment of the SSB must be applied to ensure that price and all other relevant factors that are revised are properly considered. At the conclusion of discussions, all firms remaining in the competitive range are advised that discussions are closed, and are requested to submit their final revised proposal by a common closing date.

d. Duties and Responsibilities of the TEB and TEB Chairperson:

1. When established, the TEB advises the SSB on technical and specialty areas. The TEB is used in an advisory capacity to bring to bear the broadest possible base of experience and expertise. The TEB does not have access to the price/cost proposals at any time during the evaluation process.

2. The TEB chairperson is responsible for ensuring the TEB performs its duties in accordance with the source selection plan and applicable regulations. The chairperson:

a. Convenes the TEB and presides over TEB meetings.

b. Acts as liaison between the TEB and the SSB.

c. Reconciles disagreements and discrepant ratings between the evaluators, and documents the rationale for the differences if unresolved.

d. Documents and preserves the findings of the TEB in a written report to the SSB, which summarizes the results of the TEB's evaluation, using adjectival ratings, and identifies the strengths, weaknesses, deficiencies, and risks in each proposal. In addition, the report states those areas in which a proposal fails to conform to solicitation requirements, as well as whether additional

information is required to resolve uncertainties or ambiguities in the proposal. In the event a proposal fails to conform to solicitation requirements, the TEB report also states whether, in the TEB's opinion, the deficiencies can be corrected following discussions with a reasonable amount of effort, or whether the proposal would instead require major revisions to become acceptable. All TEB members sign TEB reports. If the TEB is unable to reach unanimous agreement on the content of a report, the TEB chairperson forwards minority reports prepared by the dissenting TEB member(s).

3. The TEB members as a group:

a. Maintain confidentiality of evaluation process.

b. Conduct the evaluation of the technical/management experience of each proposal, rate the proposals in accordance with the guidelines set forth in the SSP, and document the rationale supporting the rating.

c. Identify the strengths, weaknesses, and risks in each proposal, as well as whether it conforms to solicitation requirements. Identify specific deficiencies and items of "gold plating" (if any) for each proposal.

d. Document significant review concerns and/or questions that should be asked of one or more of the proposers.

e. Re-evaluate and assign a quality rating to each proposal as a result of discussions (if revised proposals are required and received).

f. Sign individual evaluation sheets and board narrative used to support the total quality rating assigned to each proposal.

The TEB/SSB is comprised of highly qualified representatives of the assigned functional areas. Each member of the TEB/SSB is charged with the responsibility of

reviewing the proposals and assigning quality ratings in accordance with the provisions of this SSP. It is the responsibility of each source selection participant to ensure that the confidentiality of the evaluation process is maintained. All evaluation material is marked "Source Selection Information – See FAR 3.104." Dissemination of proposals or evaluation material outside designated evaluation areas is prohibited without the permission of the Contracting Officer. The chairperson arranges adequate security facilities and procedures for all evaluation material within their custody and ensures that all board personnel understand and adhere to the security requirements described in the SSP. All evaluation material is secured at all times.

The following outline is provided as a high-level summary overview of the SWDIV source selection process:

1. Source Selection Plan Approved by SSA
2. Final Synopsis Posted to Commerce Business Daily (CBD)
3. Requests for Proposals Posted to Electronic Bulletin Board
4. Site Visit/Pre-Proposal Conference
5. Receipt of Proposals
6. Technical Evaluation Board Convenes
7. Source Selection Board Convenes
8. Prepare Board Report (over $30M)
9. Submit Pre-Business Clearance for Approval
10. Pre-BCM Approved by PCO
11. Transmit Discussion Questions to Offerors
12. Notify Offerors Removed from Competition
13. Receive Responses
14. Technical Evaluation Board Reconvenes
15. Source Selection Board Reconvenes
16. Complete Re-Evaluation/Revise Board Report
17. Prepare Final SSB Report (over $30M)
18. Submit Post-Business Clearance for Approval
19. Post BCM Approved by PCO
20. Request Subcontracting Plan from Contractor
21. Receive/Review Subcontracting Plan
22. Approve Subcontracting Plan (PCO)
23. Award Contract

The features of the current SWDIV source selection process that are most germane to this research are the duties of the TEB/SSP Chairperson to maintain control of the process to

ensure its security and integrity, and to capture and consolidate the individual board members' evaluations into a clear, accurate, and concise board report.

B. PROCESS ANALYSIS AND THE PATHOLOGIES OF THE CURRENT BEST VALUE SOURCE SELECTION PROCESS

A Process Innovation Framework is used to analyze the Best Value Source Selection process, and the process is analyzed, using the Process Innovation Framework and KOPeR, to identify potential innovation opportunities. The specific process innovation concept selected for this thesis is Davenport's "High-Level Approach to Process Innovation." (Davenport, 1993, pg. 23) Therefore, this thesis is based on a top-down review of the Best Value Source Selection process using Davenport's conceptual model. The model provides a framework for analyzing the process for possible innovation opportunities. Accordingly, the process is identified, change levers are identified, a process vision is developed, and the existing process is dissected so that it may be better understood and analyzed.

The data and information outlined above are presented in a logical order based on Davenport's model. As such, the result of each of Davenport's five phases is sequentially described in the following sections. The first four phases of the Davenport model are discussed in this chapter because they are concerned with the current, or "as is," state of the Best Value Source Selection process. Chapter IV continues the analysis by proposing redesign alternatives, along with an assessment of the proposed alternatives.

1. Phase I: Identify Process for Innovation

As described above, Davenport's Process Innovation Framework is used as the conceptual backbone for this thesis. (Davenport, 1993) As such, Table 8 provides a list of the specific activities that are used for the analysis of the Best Value Source Selection process in this phase. This section is broken out into the five steps outlined in phase one of Davenport's model, and shown in Table 8.

Enumerate Major Processes
Determine Process Boundaries
Assess Strategic Relevance
High Level Judgments of the Health of Each Process
Qualify the Culture and Politics

Table 8. Key Activities to Identify Process for Innovation. From Ref. Davenport, 1993

These five steps are followed in phase one to provide a detailed description and analysis of the Best Value Source Selection process.

a. Enumerate Major Processes

As Davenport describes his Process Innovation Framework, he states that process innovation begins with a survey of the process landscape to identify processes that are candidates for innovation. (Davenport, 1993, pg. 27) For this thesis, this is achieved through an informal survey of SWDIV Contracting Officers to identify a process that they feel is important to the command's acquisition strategy, but that is dysfunctional in its current form. The Best Value Source Selection process is frequently named as a process that is vitally important to the acquisition strategy of SWDIV, but is generally perceived to be frustrating, time consuming, tedious, needlessly difficult, and generally broken. This fact is addressed in this thesis in Chapter II, section A.5, "Potential Shortcomings of the Current Source Selection Process."

Once the candidate process for innovation is identified, it is broken down into its core competencies, or "task nodes" as they are referred to in the KOPeR model. (Nissen, 2001) These core competencies are also analyzed during this phase. According to Davenport, a core competency can be either a single process, or it can be infinitely divisible. For example, the activities involved in taking and filling a customer order may be viewed as one process or as many. (Davenport, 1993, pg. 28) However, it is generally true that the greater degree to which you can limit the scope of a given process, and thus the number of task nodes, the greater the possibility of innovation through process

integration and the greater the understanding, measuring and changing of the process. (McCarthy, 1998) Like most things, a balance must be struck between oversimplification for the sake of ease of analysis and over complication in an attempt to capture all of the nuances of the process. Given these sometimes conflicting requirements, the Best Value Source Selection process is broken down into 34 steps or tasks. A "top down" approach is used to identify major steps in the Best Value Source Selection process, and the resulting process tasks are provided as Appendix C to this thesis. These process tasks form a baseline for the analysis of the Best Value Source Selection process.

b. Determine Process Boundaries

The second step in Davenport's Process Innovation Framework is to identify the process boundaries. Process boundaries are often not simple and straightforward or easily identifiable. To help aid in the identification of process boundaries, Davenport suggests several questions to help define process boundaries. (Davenport, 1993, pg. 31) These questions are given below.

1. When should the process owner's concern with the process begin and end?
2. When should the process customers' involvement begin and end?
3. Where do subprocesses begin and end?
4. Is the process fully embedded within another process?
5. Are performance benefits likely to result from combining the process with other processes or subprocesses?

These questions are answered in turn in the following paragraphs. The answers to these questions define the process boundaries for analyzing the Best Value Source Selection process.

The first question asks, when should the process owner's concern with the process begin and end? The Best Value Source Selection process begins when the project leader and contract specialist receive the final plans and specifications for a given project and ends when the contract specialist awards the project. While it can be argued that the Best Value Source Selection process begins with the generation of a customer requirement and ends with a completed project, this would represent the entire

acquisition process, and is beyond the scope of the Best Value Source Selection acquisition process. For example, using this broader definition, one can see that the same requirements generation process and construction of the deliverable product could be, and often are, performed exactly the same way regardless of whether the contract is solicited as a Best Value Source Selection, Invitation for Bids, Simplified Acquisition, or Set-Aside. Therefore, the Best Value Source Selection process is delimited by receipt of final plans and specification and the award of a construction contract. While the process owner is certainly concerned with what happens before and after these events, they are not intrinsically part of the Best Value Source Selection process. It just so happens that the process owners for these preceding and anteceding processes are typically the same individuals. Again, placing process boundaries is more art than science. (Davenport, 1993, pg. 31) However, by drawing the beginning and ending points where we have, it is possible to isolate the Best Value Source Selection process sufficiently enough to successfully analyze the process.

The second question asks, when should the process customers' involvement begin and end? The process customers' involvement begins when SWDIV communicates to the customer that the Best Value Source Selection process is chosen as the appropriate acquisition strategy and ends when the project is awarded and the customer is notified of the award decision. The decision to use this particular acquisition tool is rarely made without direct input from, and consultation with, the customer. However, to distinctly delineate the process boundary, the formal customer notification that this particular acquisition strategy is chosen is the most logical beginning point.

The third question asks, where do subprocesses begin and end? Bear in mind that many of the procurement process steps have associated subprocesses. The subprocess boundaries are not as clearly defined as the primary process boundaries. Some of the primary process steps have subprocesses that are clearly associated with that function. However, many of them overlap into other process steps. Because of the existence of this overlap, many of the associated subprocesses tend to merge and no clear boundaries can be defined for these subprocesses.

The fourth question asks, are performance benefits likely to result from combining the process with other processes or subprocesses? As was alluded to earlier, the Best Value Source Selection process is simply a process within the overall acquisition process. While it is a vital part of the overall acquisition strategy, it is only one cog in the wheel that turns a customer requirement into a delivered product or service. Logically, it would seem that by combining this process with the requirements generation, design, contract administration, and other related processes performance benefits would be realized. In fact, to some extent this is already being accomplished. When an acquisition strategy is developed, not only is the method of procurement considered, but also the entire life cycle of the acquisition and the product or service being acquired. However, this level of process integration is outside the scope of this thesis, and is not considered here. Again, the process boundaries that are defined here do not represent "hard" process boundaries where there is no overlap with any other process in the acquisition of a product or service. Instead, these process boundaries are defined in a way that the Best Value Source Selection process can be successfully analyzed, its process pathologies can be identified, and redesign alternatives can be recommended.

In summary, process boundaries are identified for the beginning and ending of the Best Value Source Selection process. The process begins with the receipt of final plans and specifications, and ends with contract award. Intuitive analysis suggests that performance benefits may be achieved by combining this process with other existing processes or subprocesses. However, this is beyond the scope of this thesis.

c. Assess Strategic Relevance

Davenport states that the most obvious approach to process selection for innovation opportunities is to select the process that is most central to accomplishing the organization's mission. (Davenport, 1993, pg. 31) While it may be argued by some that the Best Value Source Selection process is not the most central to accomplishing SWDIV's mission, this thesis demonstrates that within the contracts community, this process is seen as integral to the successful accomplishment of its mission, and that its importance continues to grow. An ever-growing portion of SWDIV's execution

workload is being awarded via orders to Multiple Award Contracts (MACs). These MACs are exclusively solicited and awarded using Best Value Source Selection. Even the remaining "stand alone" contract actions that are not awarded via a MAC task order are predominantly being awarded using the Best Value Source Selection process. (Navy PMRS, 2001) FAR Part 1.102(d) states, "The Acquisition Team is to exercise personal initiative and sound business judgement in providing the ***best value*** product or service to meet the customer's needs." [Emphasis Added] (Defense Acquisition Deskbook, 1997)

Given these facts, the Best Value Source Selection process is central to the execution strategy of SWDIV. Without the Best Value Source Selection process, SWDIV cannot meet its execution targets and remain true to the FAR guiding principle of providing the best value product or service to the customer. The efficiency and effectiveness of this process is critical to the future success of SWDIV's strategic plan.

d. High Level Judgments of the Health of Each Process

To accurately judge the health of the "as is" state of the Best Value Source Selection process, this thesis relies upon Davenport's definition of process health. (Davenport, 1993, pp. 32-33)

> Among the many symptoms of an unhealthy process is the existence of multiple buffers, reflected in work in process queuing up at each step… Process health is also suspect if a process crosses many functions and involves many narrowly defined jobs or has no clear owner or customers. Good indicators here are if no one gets upset when the process product is late or over budget, or no one is sure whom to call when deficiencies are noted.

Judged by Davenport's measures, the Best Value Source Selection process in its current state is patently unhealthy. First, the current process has many occurrences of review and approval steps. Many of these reviews and approvals are mandated by regulation, but some are not. While this is not the multiple buffers and queuing that Davenport refers to, it is the service process equivalent. By having so many reviews built into the process, it is almost guaranteed that the process will be slowed or stalled each time a review is required. This does lead to a "queue" of sorts, typically in the reviewer's in-box. More often than not, a given reviewer has more documents to review than time to

review them. Typically, this leads to one of two possible outcomes. Either the document gets held up with no additional value added for a period of time until the reviewer can get to it, or the reviewer does not spend an appropriate amount of time reviewing the document, leading to mistakes being missed and poorer quality documents. This type of "review" does not add value to the process. It is simply a rubber stamp.

Second, the Best Value Source Selection process does cross many functions and involves many narrowly defined jobs. The process involves project leads, contract specialists, technical experts and reviewers, and operations assistants. Each of these functions is very different from one another and often lead to members of the process having different goals and motivators. Frequently there is no clear owner or customer of the process. To some, the customer may be the end user, to others the funding source, and to still others the program manager to whom this is just one of a series of projects in their program. To be sure, there are other possible customers, but clearly there are often conflicting and opposing opinions as to whom the ultimate customer of the Best Value Source Selection process is.

Lastly, while it is true that many people tend to get upset if the process product or service is late or over budget, it is also true that there is typically much confusion over who to call when these events occur, or who is in charge of the process. Like many government processes, there is generally no single point of contact or single store front that has either the information necessary to answer critics' questions or to correct any problems that are identified. Davenport suggests that this symptom is often an indicator of an unhealthy process.

This section demonstrates that the current Best Value Source Selection process is a potentially unhealthy process as defined by Davenport. This observation lends strength to the theory that the current process is an excellent candidate for process innovation.

e. Qualify the Culture and Politics

This research finds that a potential dichotomy exists between the political and cultural climate for change. The current period is an excellent time politically for

innovation and change. This fact is successfully demonstrated in Chapter II, section A.4 of this thesis. The regulatory climate in recent history has been highly dynamic. Many of the processes the Federal government used to employ to procure products and services have been radically altered. The most senior leaders in the Federal government and the Defense Department are supportive of these changes. In fact, reform of the Federal acquisition regulations became mandatory under the Clinton administration. (Clinton, 1993) With the various government reinvention initiatives, headed up by Vice President Al Gore, the Clinton administration set the acquisition community on a course of reform that is virtually irreversible and unprecedented. (Gore, 1993) The current political climate bodes well for process innovation. However, political support tends to be very high-level and does not always translate well to the working level. This is why it is important to assess the cultural climate as well, particularly at SWDIV.

Culturally, the climate is not as warm toward change and innovation. Computer illiteracy is a major problem within the DoD workforce. (DoD, 1997) Because of recent downsizing, and the inability of DoD to hire new civil service employees, the DoD workforce is rapidly aging. (DoDIG Report, 2000) A portion of the current workforce is resistant to change, particularly change brought about by information technology. Many of the more senior civil service employees have seen a plethora of changes take place within the acquisition community over the course of their careers. These workers are often cynical, and tired of the continual changes and the associated temporary confusion and productivity setbacks that often accompany reforms. As the workforce continues to shrink, and the workload per employee continues to rise, the workforce is often working harder to keep up and is demoralized in the process. This ever-increasing tempo of workload and changes has left many in the DoD tired and resistant to process innovation. (DoDIG Report, 2000) Unfortunately, at the DoD level, these trends are projected to continue for the foreseeable future due to retirements and natural attrition. (DoD Report, 2000)

This being said, SWDIV has taken major steps in the recent past to overhaul the organization and the way that it does business. This fact is demonstrated in

Chapter II, section A.2 of this thesis. SWDIV is often viewed within the NAVFAC community as progressive and forward thinking. Many of the reengineering trends and organizational changes that have taken place within NAVFAC in the past five years had their genesis at SWDIV. While the demographic trends at SWDIV are very similar to those reported in the Acquisition 2005 Task Force report, SWDIV employees generally take change in stride. This is not to say that change never meets with resistance at SWDIV. The cultural climate toward change at SWDIV is not as warm as the political culture toward change at the Defense Department. However, while the workforce may pose some cultural resistance to process innovation, the current political climate is such that, if the change is executed in a logical, supportable way, the resistance can be overcome. Therefore, with the support of senior leadership, it is a good time for the Best Value Source Selection process to change and reap the benefits of process innovation.

2. Phase II: Identify Change Levers

In the second phase of Davenport's model, the potential technological and human change levers or enablers are identified. (Davenport, 1993, pg. 47) Table 9 is provided as an outline of the steps that are involved in this phase.

Identify Potential Technological and Human Opportunities for Process Change
Identify Potential Constraining Technology and Human Factors
Research Opportunities in Terms of Application to Specific Processes
Determine which Constraints will be Accepted

Table 9. Key Activities to Identify Change Levers. From Ref. Davenport, 1993, pg.48

The overarching goal of this phase is to identify all of the technological and human enablers that are available to the organization that can be used to leverage the process innovation process and increase its likelihood of success. Human enablers are examined in this phase along with technological enablers because technological enablers alone are insufficient to bring about the quantum level performance enhancements that

are sought through the Process Innovation Framework. Davenport makes this point in the following excerpt from his book: (Davenport, 1993, pg. 46)

> No longer would we expect an IT investment in itself to provide an economic return. We would recognize that only change in a process can yield such benefits and that the IT role is to make a new process design possible. [e.g. As an enabler of that change.] Managers seeking returns on IT investments must strive to ensure that process changes are realized. If nothing changes about the way work is done and the role of IT is simply to automate an existing process, economic benefits are likely to be minimal.

In fact, Davenport observes that historically when IT is used to simply automate an existing legacy process, productivity actually tends to *decrease*. (Davenport, 1993, pg. 41) He calls this method of applying IT to existing processes "functionally oriented," and concludes that "such 'stovepiped' systems cannot support a process view of the organization; they imprison data within functions." (Davenport, 1993, pg. 44) This is why this research considers both the potential technological *and* human change levers.

a. Identify Potential Technological and Human Opportunities for Process Change

There are several issues that are often cited as areas where IT is uniquely suited to streamline, improve, or make a process more efficient. Human error is one of these issues. Input errors typically require a substantial amount of time to correct and can contribute to delays in completing a transaction due to incorrect data. "Fat fingering," as manual input is commonly referred to, can be greatly reduced by the appropriate application of IT. It is still common in offices today to have several databases and data input points throughout a process. Often, the data that is being manually entered is the same or very similar. This is inherently duplicative work and, given that humans are prone to error, this often leads to multiple databases containing conflicting data. In fact, it is not uncommon for data that are entered into a database in a particular office to remain insular to that office, and not shared with other offices within the same organization that require that same data. This phenomenon serves to increase the risk of errors, slows the overall process, and limits the information available to any given

employee within the organization. In the most severe cases, employees do not even realize that information that they require to perform their job is already entered into a database system and is available, and so they duplicate the effort already expended to enter the data into a separate database. This is why many of today's office employees are frustrated by multiple databases and having to continually "reinvent the wheel" when it comes to data entry and processing. This type of scenario is highly inefficient, does not allow for the sharing of information, and raises the number of errors and data discrepancies.

This is an area where IT, properly applied, can be leveraged to innovate a process. In this step of the Process Innovation Framework, technology is identified that has the potential to be an enabler to innovate the Best Value Source Selection Process. Davenport identifies nine areas in which IT may support process innovation. (Davenport, 1993, pg. 51) These nine areas are touched upon briefly in Chapter II, section B.2.b.1 of this thesis (see Table 3). These nine areas are now examined as they specifically apply to the Best Value Source Selection process.

1. Automational: The most commonly recognized benefit of IT is its ability to eliminate human labor and produce a more structured process. (Davenport, 1993, pg. 51) The Best Value Source Selection process can be defined as an information or document workflow process. By describing the duties and responsibilities of the various source selection process participants, this thesis demonstrates that the process is very paper-oriented, review-intensive, and information-reliant. The process must also control all of the paper, and the information contained thereon, due to the regulatory requirements placed on the process. If possible, automation of the entire process, from receipt of plans and specifications to award of the contract, would allow for the removal of paper from the process and would go a long way toward eliminating some of the problems inherent to a paper process. Technology currently exists that could effectively eliminate the source selection paper trail. One such technology is Web-enabled, fully automated knowledge management applications that could significantly reduce human error and the duplication of effort.

This type of IT tool could produce secure, comprehensive, high-integrity documentation, and has the ability to facilitate the group collaborative process, which is vital to the successful execution of the Best Value Source Selection process. These attributes and others will be discussed in more detail under the following areas.

2. Informational: Information can be used not just to eliminate human labor from a process, but also to augment it. (Davenport, 1993, pg. 51) IT has the ability to capture information, after having been manually entered one time, and share that information across platforms and with multiple users in various locations. These users may use this information in various ways, but however it is utilized it is consistent and common to all that have access to the data. This feature of IT to collect, maintain, and make widely available information allows for collective retrieval and analysis of information by multiple users. This increases process output consistency. The old adage "garbage in, garbage out" can be substantially reduced by setting up the IT to filter the initial data input, and then by maintaining the data in a central database, so that consistent data is accessed by all employees that require the data to produce a particular output. As applied to the Best Value Source Selection process, the solicitation, source selection plan, evaluation criteria, contractor proposals, individual and group assessments, individual questions and answers, and direction from the source selection chair can be instantaneously shared and accessed by all of the board members. This serves to reduce confusion, provides all members with all of the available information, and eliminates duplication of work. It also assists in the management and tracking of the process.

3. Sequential: IT can enable changes in the sequence of a process or transform a process from sequential (one step at a time) to parallel (two or more steps at a time) in order to achieve process cycle time reductions. Davenport provides examples of IT being successfully used to reduce cycle time. Kodak used this approach to radically reduce the design and development cycle time for the single use (disposable) 35 mm camera. Phoenix Mutual Life employs a sophisticated IT system to control work flow and transformed a previously sequential underwriting process into a new process that is sequential in parts, parallel in parts, and can be reconfigured around bottlenecks,

such as vacationing employees. This new process allows the firm to issue an estimated 70% of its policies overnight. (Davenport, 1993, pg. 52)

This same line of thinking can be applied to the Best Value Source Selection process. If a board member is suddenly ill or an emergency arises and they are no longer able to continue with their evaluation, typically their evaluations are turned over to the chair and whatever information may be gleaned from the paperwork is assimilated into the board report. This is a tedious process, particularly if the member is not available to interpret their yet-incomplete evaluation notes. More often than not, this board member's incomplete evaluation is discarded, and their input is lost. In a paper environment, one has no choice but to attempt to physically move all of the member's data. However, in an IT enabled environment, where data is kept in a shared data warehouse, members with appropriate access can instantaneously access the required materials.

A shared data warehouse arrangement also allows for performing parallel reviews. A board chair or source selection authority can review any of the in-progress reviews and completed reviews at any point in time. Also, issues can be raised in a "chat room" setting on-line so that the chair or SSA do not have to address the same issues multiple times, thus saving time and freeing up these individuals' time. Lastly, having all of the selection information in a single database allows a reviewer to ask questions or seek additional information "virtually" as they are in the process of conducting their review. No longer does the reviewer have to stop, set the document aside, seek out the correct individual to inquire of, and halt their review. IT enables the reviewer to immediately pose the issue to the entire board or, even more empowering, allows the reviewer to search the information in the database (e.g. the reviewer can call up the actual contractor proposal to clarify an issue themselves) without having to rely on a board member or the chair being available. This IT feature is a catalyst for parallel processing and eliminates many time consuming, manual, non-value-added steps in the current process.

4. Tracking: As this thesis demonstrates by describing the duties and responsibilities of the various board members, and particularly the chair and SSA, keeping track of the selection process is vitally important. Currently this function is performed in a completely physical way. All of the board members' materials (solicitation, source selection plan, evaluation criteria, contractor proposals, individual and group assessments) must be issued, physically tracked, collected, and secured every day. This is time consuming, laborious, and is often not done well. Board chairs often lose track of certain items, and it is all but impossible to physically watch and account for all of the aforementioned materials every minute of every evaluation process. By utilizing IT, the chair or SSA can review all of this information from their workstation, and by placing the appropriate security safeguards on the database, can protect the evaluations and associated materials from being viewed, printed, or shared with an inappropriate party, or otherwise being compromised. This greatly reduces the chances of the selection decision being overturned under protest due to a security compromise. The tracking functionality made possible by IT also documents the process in great detail. This is also very useful in defending against a protest, as the process that was followed to make the selection can be easily corroborated and demonstrated for a court. IT makes the entire process transparent to the participants and supervision, reducing the number of errors, and preventing discrepancies. Tracking allows management to continually review and manage the process flow in a virtual way, rather than in a more typical ad hoc fashion.

5. Analytical: IT can bring to bear an array of sophisticated analytical tools for use by the source selection board. The benefits of automated analytical tools include quicker analysis, less human error, and a broader depth of data available to perform an analysis. Currently, board members analyze each proposal by hand with little or no help from IT tools. Often, proposals are analyzed one at a time, and without revisiting the source selection plan or selection criteria. This leads to inconsistencies in the individual evaluations, generally resulting in the first or last proposal that is reviewed receiving a better or worse evaluation than it should, relative to

the other proposals and the source selection plan. IT can be used to reduce the amount of time required to capture the data required to formulate a final board report, and the analysis process can be streamlined by using the shared data warehouse information, and data manipulation and report generation capability technology available today.

6. Geographical: More than any other benefit of IT, its ability to overcome geography is perhaps its greatest contribution. IT enables businesses to communicate and conduct business around the world. Global companies are increasingly finding that their processes must execute seamlessly and consistently between their widely dispersed geographical locations. (Davenport, 1993, pg. 53) However, even with all of the advances that have been made in communication in the past 50 years, many processes still rely on 19th century technology. The current Best Value Source Selection process still typically relies on physically locating all of the board members in the same room and sequestering them until a selection decision is made. This is highly inefficient. First, more often than not, not all of the board members are local, so they drive or fly in to the evaluation site for the duration of the process. It is not only expensive to pay for transportation and lodging for these members, but while they are performing the instant selection, they are unable to address any of their other projects. Second, this limits the pool of potential evaluators that can be utilized, based on their availability to travel.

By utilizing IT and a shared data warehouse, physical boundaries can be overcome. Of course, there are always concerns about data integrity and security. However, with current 128-bit Secure Socket Layer (SSL) encryption technology, it can be reasonably argued that data shared over vast geographic distances using this technology is as or more secure than paper being scattered about a room, and transported back and forth every evening for “secure” storage.

One side benefit to IT is that it enables government and industry to securely interface and share data across geographic regions. This is extremely helpful if, as a result of the evaluation, discussions must be conducted. With this technology, the process would not have to stop while questions are drafted up in a paper format and mailed out to the interested parties. The turn-around time is also a concern with the

current process, as contractors must be given sufficient time to receive and respond in kind to a paper-based transmission. As IT becomes more Internet-based, the geographical capabilities of IT become nearly limitless. By utilizing IT, the government has access to a vast amount of data and resources otherwise inaccessible to the selection board. This would include market data, past performance data, company information, past projects, and many other resources.

7. Integrative: This issue is touched upon under the previous items in this section. By using IT and shared data warehouses, data can be shared throughout the organization and among various evaluation team members. This allows for the easy integration of a final board report. In fact, final board reports can be produced by the system in the form of a report template, which can then be edited by a final reviewer. This eliminates multiple edit iterations. Also, the integration of data allows for continual and complete monitoring of the progress of the process and gives supervisors, chairs, and SSAs the ability to follow the process from beginning to end. This same privilege could even be extended to customers, giving them the ability to access certain information about the process so that they can receive an up-to-the-minute status report. All of this is possible given the proper use and implementation of IT and a shared data warehouse.

8. Intellectual: It is an oft-stated mantra in industry and government that people are our most important asset. However, human intellect, or intellectual capital, is often one of the most difficult assets to capture, quantify, and manage. With the advent of the latest IT tools, many companies are attempting to do just that, so that the collective corporate knowledge can be applied more broadly and consistently. IT, in the form of process review, process innovation, and application of new integrated systems provides an opportunity to capture more employee knowledge and know-how by ensuring that all employees have access to a much broader range of information.

Davenport provides some corporate examples of intellectual databases. American Airlines is building a database for customer service “best practices”

and procedures that can be accessed by customer service representatives at every American Airlines customer service location worldwide. Several of the Big Six accounting firms have developed networks to share and transmit tax and accounting information. (Davenport, 1993, pg. 54) Each of these scenarios is an example of corporations sharing information with all of its employees using IT so that its customers are better served. By employing this same technology, the government can innovate the Best Value Source Selection process so that the evaluators have a broader range of information at their disposal so that they are no longer working with limited information, and the best value decision can be made. In effect, each individual source selection board can have access to the vast knowledge and experience of all of the source selection boards that have preceded them.

9. Disintermediating: It has become increasingly clear in many industries that human intermediaries are inefficient for passing information between parties and are prone to error. Consequently, many businesses have established automated exchanges, the most high-profile example of which is the NASDAQ stock exchange. (Davenport, 1993, pg. 54) Rarely can two humans pass information from one to another, without the help of an IT tool, without altering the information in some way. Humans inherently hear and interpret ideas and information differently. Thus, information exchanged among humans is often inaccurate. Information transmitted electronically, while not immune to an individual human misinterpretation, does not vary from point to point during transmission. A chain email is a good example of this. While each recipient may interpret the email differently, the content of the email itself – the information – remains unaltered (unless one of the recipients purposefully alters the information prior to forwarding the message). IT tools have the capability to send, store, and access shared data warehouses. This capability reduces the amount of inevitable human error in the communication of information. This way, it is more likely that all participants in a process are working from the same set of data, thus helping to eliminate errors in judgment brought about by inconsistent data.

b. Identify Potential Constraining Technology and Human Factors

Technological and human factors can not only enable process innovation, but also can hinder or constrain it. Davenport's model suggests that, along with the enabling technological and human change levers, constraints and limitations should be identified as well. Davenport suggests that technological and human constraints are endemic to any process, and need to be identified so that, even if they cannot be practically eliminated through process innovation, they can be understood and managed. They must also be taken into account when developing redesign models. (Davenport, 1993, pg. 63) The foremost constraints working against process innovation of the Best Value Source Selection process are the cost of potential IT enablers, the existence of legacy systems and processes, security concerns, and the innate human fear of change. These issues are addressed in the following sections.

1. Cost: The most obvious constraint working against innovating the Best Value Source Selection process using IT as an enabler of that innovation is cost. Investments in computer equipment, networking capabilities, software, and IT support are typically very costly. While previous research clearly demonstrates that the use of Knowledge-Based composition Systems (KBS), similar to the type of IT described in this thesis, generally results in large net savings in process cycle time and cost, it is typically not an inexpensive solution. (Nissen, 1997) The up-front investment in software applications and hardware upgrades can be substantial, depending on the particular solution that is selected. These hardware upgrades generally affect the client machines, as well as the server. This can drive up the cost of KBS implementation. There is also the cost of training and technical support to consider. Depending on the type of technology chosen, PCs, LAN servers, and Internet connection bandwidth may have to be upgraded. Funding support for these types of upgrades is usually derived from operating budgets. Operational funding is already stretched very thin in today's DoD budget climate, and there are many competing interests vying for operational funding. Therefore, if an IT-enabled proposed solution is going to be viable, it must clearly demonstrate a return on the IT investment.

2. Existing Legacy Systems and Processes: While it is true that no legacy system exists at SWDIV that is comparable with the IT enablers considered by this thesis, there are many applications and processes that SWDIV employees are accustomed to using to perform their source selections. One example is Microsoft® Word. Much of what is composed at SWDIV is written using Microsoft® Word. SWDIV employees are comfortable with this application, and often have "boiler plate" reports saved as Microsoft® Word documents or templates. There is no guarantee that the IT tool chosen as the standard for conducting Best Value Source Selections will use Microsoft® Word as its text editor/report writer, or that the product produced by such a system would be compatible with Microsoft® Word. While this may not be an issue at all, depending on the specific IT solution chosen, it could be a point of resistance for some.

3. Security: In casual conversations with acquisition professionals, perhaps the most common concern expressed regarding the use of an IT tool for source selection is security. The need to protect source selection sensitive information is real. FAR Part 3.104 specifically directs the proper handling and use of source selection sensitive material, which includes nearly every piece of documentation generated during a Best Value Source Selection process. In addition, the Privacy Act of 1974, the Paperwork Reduction Act of 1980, and the Computer Security Act of 1987 all recognize the need to protect sensitive Federal government data. These security needs are more acute as the Federal government's reliance on computer systems has increased significantly in the past decade. The issue is further complicated by the rapid growth in computer crime, hacking, and virus infestation, as well as the growing complexity and ubiquity of computer networks.

As government agencies expand their reliance on automated and inter-connected information systems, they face an ever-increasing challenge to protect the integrity, confidentiality, and availability of the data they maintain. (McCarthy, 1998) Failure to do so can be devastating. The GAO reports that in 1996 DoD experienced at

least 250,000 computer attacks from hackers. (Leonard, 1997, pg. 68) This number has surely grown significantly since 1996.

Given the statutory and regulatory requirements for information security, and the ever increasing assault on computer networks, one must recognize that information systems security involves accepting a certain degree of risk. Since absolute security is not obtainable (in either the physical or cyber world), agencies must decide on how great of a security risk to their systems and the information contained therein they are willing to accept, and how much money they are willing to spend to defend against cyber-attack. Obviously, we have come too far in the information age to reverse the trend. Agencies must work with networked computer systems. A certain degree of risk is inherent to everything that the government does, including entering into a contract for products or services. The key is to define "acceptable risk" for a given process, and then match the IT solution to that level of risk.

4. Human Fear of Change: Human beings naturally tend to fear what they don't understand. This is true of aboriginal people who have never seen an airplane, and it is equally true of a government employee who has never entrusted their source selection sensitive documentation to a nameless, faceless, emotionless machine. Inexperience and fear of change limit an organization by causing its management to adopt a "wait and see" attitude. Inexperienced decision makers can hinder the change, and cause those under them to irrationally resist change as well. The bottom line is this, without support from management; an organization such as SWDIV cannot realize the potential benefits of process innovation. Without taking reasonable risks, there can be no expectation of reaping rewards.

c. Research Opportunities in terms of Application to Specific Processes

Davenport states in his book "when a process extends across organizational boundaries into customer and supplier organizations, it may be impossible to assume a clean slate of system support." He further goes on to state "one cannot expect a customer to change systems to better supply one's firm with process information." (Davenport, 1993, pg. 65) As Davenport explains it, researching

opportunities in terms of application to specific processes allows for the identification of external system processes. The Best Value Source Selection process, recognizing the process boundaries defined in Chapter III, section B.1.b, does not typically cross into external system processes. While customer consultation and input is sought as an inherent part of the source selection process, there is no known externally imposed constraint acting upon the Best Value Source Selection process. Insofar as the customer, end user, and funding agent receive the product or service that they desire within budget and in a timely fashion, it is not contemplated that the Process Innovation Framework being exercised in this thesis is constrained by external systems.

d. Determine which Constraints will be Accepted

Solution cost and available funding issues are the primary drivers in determining the constraints that will limit the successful implementation of the process innovation solution chosen for the Best Value Source Selection process. To implement the process innovation solution proposed in this thesis will certainly require a notable financial investment on the part of SWDIV. These funds are not earmarked, and would most certainly have to come at the expense of something else that the command is currently funding out of its operations budget. Also, since absolute security is not feasible, it is necessary that a certain degree of risk be taken to realize the full potential of process innovation. Therefore, the process innovation solution takes these accepted constraints into account.

3. Phase III: Develop Process Visions

Phase three of Davenport's process innovation framework is to create a process vision. Process innovation is only meaningful if it improves a business in ways that are consistent with its *strategy*. Alignment between strategies and processes is essential to process innovation that results in radical change. In fact, according to Davenport, process innovation is impossible unless "the lens of process analysis is focused on a particularly strategic part of the business." (Davenport, 1993, pg. 117) But even a clear organizational strategy cannot motivate innovation without a well-defined process *vision*. A process vision consists of specific, measurable objectives and attributes of the future

process state. Process vision provides the link between strategy and action. (Davenport, 1993, pg. 118) Process visions should be easy to communicate to the organization, nonthreatening to those who must implement, or who are affected by, them, and inspirational. (Davenport, 1993, pg. 119)

Phase three of Davenport's model develops a process vision by assessing existing business strategies, establishing customer performance objectives, benchmarking for innovation targets, formulating process objectives, and developing specific attributes. These steps are outlined in Table 10. Each of these issues is addressed in turn in the following sections.

Assess Existing Strategy for Direction
Consult with Customers for Performance Objectives
Benchmark for Targets and Examples of Innovation
Formulate Process Performance Objectives
Develop Specific Process Attributes

Table 10 Key Activities in Developing Process Visions. From Ref. Davenport, 1993

a. Assess Existing Strategy for Direction

Strategy is a long-term directional statement on key aspects of a firm or business unit, while vision is a detailed description of how, and how well, a specific process should work in the future. Therefore, one could say that strategy is "strategic" and vision is "tactical." (Davenport, 1993, pg. 121) During this third phase of Davenport's model, existing business strategies are assessed.

FAR Part 1.102 states:

> The vision for the Federal Acquisition System is to deliver on a timely basis the best value product or service to the customer, while maintaining the public's trust and fulfilling public policy objectives. Participants in the acquisition process should work together as a team and should be empowered to make decisions within their area of responsibility.

By our definition, this is actually a statement of strategy, rather than vision, for the Federal Acquisition System. FAR Part 1.102 also lists satisfying the customer in terms of cost, quality, and timeliness of the delivered product or service, maximizing the use of commercial products and services, using contractors who have a track record of successful past performance, promoting competition, minimizing administrative operating costs, conducting business with integrity, fairness, and openness, and fulfilling public policy objectives as goals of the Federal Acquisition System. In short, it is the strategy of the Federal government and DoD to provide the best value procurement in a timely fashion for its customers.

This strategic vision is in line with SWDIV's mission statement, which is also a strategic statement (Southwest Division Homepage, 2001):

> To provide the support required to enable our war fighters [*customers*] to succeed in their national defense mission. We are responsible for leadership in facilities acquisition, installation engineering/support, and Seabees/contingency engineering required by the Navy and Marine Corps team. With a commitment to delivering products and services interdependently, we offer customers a single focal point for a range of cost-effective [*best value*] choices to achieve their desired outcomes. We are absolutely committed to providing innovative, high-quality, cost-effective, and *timely* products and services. [Emphasis and parenthetical notes added]

This strategy, at the Federal government, DoD, and SWDIV levels, is well suited to the process needs for the Best Value Source Selection process.

b. Consult with Customers for Performance Objectives

According to Davenport, a key aspect of creating a process vision is to "understand the customer's perspective on the process." (Davenport, 1993, pg. 124) Process customers can be either internal or external to the organization. Asking customers what they require of a process serves multiple purposes. The customer's perspective can furnish ideas and objectives for process performance and innovation. The type of information that should be solicited from customers is broad, encompassing desired process outputs. (Davenport, 1993, pg. 124)

When consulting with process customers, both internal and external, it is prudent to recognize that customers rarely provide breakthrough ideas for process innovation. Customers often do not know what they want or need until they see what they can get, or until they see something that they know they do not want. Their input is still important, however, because they specify the areas in which innovation should take place or where it is most needed. (Davenport, 1993, pg. 125)

Internal customers to the Best Value Source Selection process are surveyed and asked eleven questions regarding the current SWDIV Best Value Source Selection process. A sample of this survey is provided as Appendix B to this thesis. The results of this survey are provided in detail in Chapter II, section A.5 of this thesis. In general, the respondents find the process to be slow, time consuming, paper-intensive, and difficult to manage. Many of the internal customers responding to the survey believe that the Best Value Source Selection process imposes a large administrative burden on the acquisition activity, relative to other acquisition processes. The survey results are mixed with regard to cost, with as many respondents believing that Best Value Source Selection is "less expensive" than other acquisition processes as there are that believe it is "more expensive" than other acquisition processes.

On a more positive note, internal customers generally believe that this process results in better quality products or services for their external customers than other acquisition methods. The consensus opinions of the survey respondents are consistent with the researcher's experience with the use of Best Value Source Selection at SWDIV.

External government customers to the Best Value Source Selection process are surveyed regarding the process vis-à-vis how it impacts their operations, and the responses converged around five issues. These issues are:

1. The focus of the process should be on the customer rather than internal functions and convenience,
2. Customer points of contact should be involved and apprised early and often throughout the process,

3. The product or service should be high quality,
4. The delivery of the product or service should be timely,
5. The cost of the product or service should be as low as possible.

These issues are consistent with the “better, faster, cheaper, easier” theme that is alluded to in the Federal government, DoD, and SWDIV strategic vision statements. At a minimum, process innovation through the use of IT change levers addresses three of these issues. This thesis demonstrates how IT tools, such as a shared data warehouse and the Internet can facilitate customer involvement. Also, by bringing consistency and better process management into the process, IT tools can enable the process to deliver higher quality products or services, and do so in a more timely manner. This is all the more important, given the rapid pace of the military operational tempo in recent years. The fact that the process can be made quicker may arguably lower the cost of the products or services being acquired.

External industry customers to the Best Value Source Selection process are surveyed regarding the process vis-à-vis how it impacts their operations, and the responses focused on one issue: fairness. Most contractors truly believe that they can win most every contract award if the selection process is fair and unbiased. Given the high degree of subjectivity inherent in the Best Value Source Selection process, relative to a lowest-bid selection, many construction contractors are suspicious regarding the fairness of this process. By innovating the process to provide tighter controls and easier oversight, as well as the inherent detailed documentation capabilities of a shared data warehouse, these concerns can be mitigated. In fact, by automating and standardizing the process, subjectivity should be reduced, and it is much more likely that the selection board will more closely adhere to the source selection plan and selection criteria. Again, based on feedback from the Best Value Source Selection process internal and external customers, the process is an excellent candidate for process innovation through the selected use of IT.

c. Benchmark for Targets and Examples of Innovation

The next step in Davenport's process innovation framework is to benchmark for targets and examples of innovation. Benchmarking helps organizations formulate objectives for continuous improvement programs. It is also an effective tool for determining process objectives and identifying innovative process attributes. (Davenport, 1993, pg. 125) By comparing legacy processes and systems to the vision for a new, IT enabled Best Value Source Selection process performance objectives are determined.

No other acquisition organization contacted for this study, which has employed an IT-enabled Best Value Source Selection process, has collected any hard metrics that can be used to compare their legacy process's performance relative to the new, IT-enabled process. Therefore, SWDIV's existing, or legacy, Best Value Source Selection process is used as the baseline to formulate performance objectives for the new process.

Some anecdotal evidence is obtained through interviews with other agencies regarding the performance of a specific Web-based IT tool that supports the premise that the current Best Value Source Selection process can be innovated by the selected application of IT. The Defense Energy Support Center (DESC) reports that, "While the TRD [Texas Regional Demonstration - a solicitation that covers many military installations (Army, Navy, and Air Force) within the state of Texas] has not finished evaluation yet; [the new IT program] has greatly reduced the amount of time that the technical leads from the east coast have to spend onsite in Texas." (McCulla, 2001) The Defense Information System Agency (DISA) conducted a source selection over the Internet utilizing the new IT program. The overall effectiveness of the process and technology to securely evaluate proposals across the Internet was established. DISA reports that, "The IA [Information Assurance] RFP demonstrated what can be accomplished, and led the government to a new level of paperless contracting that can be applied to many acquisitions. This [new IT program] also provides a more cost effective approach to the evaluation process by not having to sequester [evaluation board

members], and limits the potential for protest. It's a good tool and the 24x7 support helped keep the milestones on track." (Eller, 2001)

The current "standard" SWDIV Best Value Source Selection process template reflects a total process time from beginning to end, as defined by the process boundaries described in this thesis, of 146 days or approximately five months. Of course, there are many variables that can affect the length, both positive and negative, of this process. The process duration given here is an "average" Best Value Source Selection process. A relatively recent SWDIV Best Value Source Selection, following this template, actually took 184 days, or approximately six months, from receipt of final plans and specifications to award. The current process is provided as Appendix D to this thesis.

The only mandated allotments of time in this process are 15 days to synopsize, 30 days to advertise (for a total of 45 days – this is true for any acquisition over the simplified acquisition threshold, which, in the case of SWDIV, includes all Best Value Source Selections), and ten days between the request and receipt of CHINFO clearance (for acquisitions greater than $10M). All other milestones are based on the time it takes to physically process a given task. By innovating the process, and selectively applying IT, all of the tasks except for the 45 days for synopsis and advertisement, and the ten days for CHINFO, should be reduced by 50% or more. This is in keeping with Davenport's definition of innovation as being a radical improvement in performance. (Davenport, 1993) If this benchmark is obtained, it represents an overall 30% reduction in process time, at a minimum, even with the mandatory 45 days for synopsis and advertisement, and ten days for CHINFO. In other words, it is reasonable to achieve an overall Best Value Source Selection process cycle time of 100 days, or just over three months, through the process innovation method!

This level of cycle time reduction is achieved through the automation of information distribution among the process participants, the analytical capability enhancements provided by using a shared data warehouse, expedition of the evaluation and report generation tasks, and by improving and streamlining the review and approval

process. In fact, only human factors limit the overall cycle time reduction that is ultimately achievable. Human factors, such as the time it takes to review and approve a source selection plan or business clearance memorandum, are enhanced by automation, but cannot be entirely eliminated by it.

d. Formulate Process Performance Objectives

Process performance objectives include the overall process goal, specific type of improvement desired, and a numeric target for the innovation, as well as a time frame in which the objectives are to be accomplished. (Davenport, 1993, pg. 127) The key question to ask when formulating process performance objectives is "what business objective is the process supposed to accomplish?" This analysis should broadly address the functions and value the process is expected to bring customers. (Davenport, 1993, pg. 128)

In the case of the Best Value Source Selection process, this research establishes that the objective of the process is to obtain a high quality product or service, at a reasonable price, and in a timely fashion for the customer. In addition, the focus of the process should be on the customer, and the customer needs to be involved early and often throughout the process. Bearing this in mind, the process innovation performance objectives should be derived from organizational strategy and quantified as specific targets for change. Davenport provides the following examples of process objectives for different industries (Davenport, 1993, pg. 128):

1. Reduce new drug-development cycle time by 50% in three years,
2. Double customer service satisfaction levels in two years,
3. Reduce involuntary employee turnover to 10% by the end of the next fiscal year,
4. Reduce processing cost for customer orders by 60% over three years.

Process objectives, like organizational strategies, should meet a number of established criteria. The level of change that is targeted should be innovative or radical; at least 50%. (Davenport, 1993, pg. 129) Davenport uses the example of IBM. In 1991,

IBM attempted to reduce time, cost, and defects by a factor of 100% by 1995. This goal was considered risky and foolhardy in the industry. However, establishing such a lofty goal clearly stimulated a great deal of work by process redesign teams, and provided IBM's management and employees with a clear vision of the innovation goal. (Davenport, 1993, pg. 129)

Process performance objectives for the Best Value Source Selection process should be ambitious to motivate the acquisition community and gain support and commitment from management to innovate the process. The process needs to be demonstrably faster, more efficient, and produce more consistent, higher quality acquisition decisions for SWDIV. Also, it needs to be able to support the organizational strategy of supporting the war fighters, and thus providing them with what they desire: a high quality product or service, at a reasonable price, in a timely fashion. To satisfy the customer is the primary objective of the Best Value Source Selection process innovation.

A secondary objective includes minimizing the administrative burden for SWDIV to execute a Best Value Source Selection. This cost should be reduced by 50% over the first three years after process innovation. By redesigning the process and leveraging IT to streamline the redesigned process, this cost reduction goal is obtainable in saved man-hours alone. The innovation of the process will decrease, and in some cases eliminate entirely, duplication of effort, documentation errors, and cycle time. Paper flow should be nearly, if not completely, eliminated. This factor alone should contribute significantly to decreased cost. Also, by no longer requiring board members to travel to perform their evaluations, travel costs will be greatly reduced or eliminated.

Another secondary objective is to reduce the Best Value Source Selection process cycle time by 30% in real terms, or by 50% for those process tasks whose duration is not set by regulation, within the first year after process innovation. Today it takes an average of five to six months to complete a Best Value Source Selection. The efficiencies made possible through process innovation should reduce that cycle time to three months, while improving quality, consistency, and documentation.

These process performance objectives are achievable and, based upon anecdotal evidence provided by this research, have already been realized by other organizations through similar process innovation redesign programs. They are also in line with the Federal government, DoD, and SWDIV strategic visions.

e. Develop Specific Process Attributes

Davenport describes process attributes as "the descriptive, non-quantitative adjunct to process performance objectives, which constitute a vision of a process operation in a future state." (Davenport, 1993, pg. 129) Process attributes are simple, bullet-like statements that describe an organization's philosophy and intent regarding the innovation of a process. An example of an organizational attribute is to collapse the division of labor in a process, that is, to organize it in such a way that a single employee oversees the entire process. (Davenport, 1993, pg. 129) Another common example of a technology-oriented process attribute is the offloading of process activities to customers by giving them access to the provider's computer systems. For example, Federal Express gives its customers the ability to check the status of their shipments via an easy-to-use and universally accessible Web site (www.fedex.com). (Davenport, 1993, pg. 130)

The following process attributes are provided for the redesign of the Best Value Source Selection process:

1. A fully automated knowledge management application,
2. Produces secure, comprehensive, high-integrity documentation,
3. Facilitates the group collaboration process and increases quality of the contract award decision,
4. Significantly increases process efficiency and speed,
5. Significantly decreases demand on personnel resources,
6. Meets or exceeds all statutory and regulatory requirements,
7. Provides standard report template formats,
8. Internet enabled and Web-based.
9. A system that ensures:

   a. Process integrity,
   b. Process management and oversight,
   c. Flexible access for geographically dispersed evaluators,
   d. Simple and intuitive interfaces,
   e. Easy maintainability and administration of the system,
   f. Data security.
10. A system that provides:
   a. Real-time access to information,
   b. Real-time progress reviews,
   c. Document quality assurance,
   d. Security controls on user access,
   e. Enhanced communication via instant messaging and bulletin board capability,
   f. A shared data warehouse that can be readily reviewed, edited, and refined.

The creation of process visions relies on assessing an organization's strategy, gathering external inputs into process redesign and performance, and translating this information into specific process objectives and attributes. However, because objectives and attributes are typically formulated before a detailed analysis of the existing process is performed, they are difficult to formulate with accuracy, and rely on prediction, as much as precision. Therefore, a process vision should be determined on the basis of what is necessary from a business standpoint, rather than what seems reasonable or accomplishable at the time. (Davenport, 1993, pg. 131) The process attributes listed here are certain to evolve and change with the advancement of technology and future acquisition reforms. The existing Best Value Source Selection process will be examined in greater detail in phase four of Davenport's model.

4. Phase IV: Understanding the Existing Process

Phase four of Davenport's process innovation framework is understanding the existing process. Describing a process is key to the successful redesign of the process. If you do not understand the current process, it is impossible to successfully innovate the process. Some approaches to process redesign do not include this step, and some organizations have omitted it in their process innovation initiatives to their demise. (Davenport, 1993, pg. 137) In many cases, existing processes have never been described or viewed as processed. (Davenport, 1993, pg. 138) Phase four is limited to a discussion of the current process in the larger context of innovation. In general, improvement initiatives require a great deal more detailed information on the current process than innovation initiatives. (Davenport, 1993, pg. 139) In this phase, the Best Value Source Selection process is described and assessed through measurement-driven inference.

Documenting the current process is the first step in developing a clear picture of the process workflow. Davenport provides four reasons for documenting an existing process prior to examining redesign alternatives (Davenport, 1993, pp. 137-138):

1. Understanding the existing process facilitates communication among the participants in the innovation initiative,
2. In complex organizations it is difficult to migrate to a new process without understanding the current process,
3. Recognizing problems in an existing process can help ensure that they are not repeated in the new process,
4. An understanding of the current process provides a measure of the value of the proposed innovation.

In phase four, Davenport outlines six steps to better understand the existing process. Following these steps helps the researcher to develop a clear understanding of the current process, and to document the existing process workflow. Table 11 provides an outline of these steps.

Describe the Current Process Flow
Measure the Process in Terms of New Process Objectives
Assess the Process in Terms of the New Attributes
Identify Problems with the Process
Identify Short-Term Improvements in the Process
Assess Current Information Technology and Organization

Table 11. Key Activities to Understand Existing Processes. From Ref. Davenport, 1993

While the Best Value Source Selection process is described at different levels and by various means throughout this thesis, in phase four the process is examined in a very specific way, so that it can be graphically captured in the KOPeR model format. The ability to successfully capture the Best Value Source Selection process in a format that is compatible with the KOPeR redesign tool is critical in that KOPeR is the high-level redesign method chosen by this researcher to perform a diagnosis of the current process, identify process pathologies, and produce recommendations for redesign. The KOPeR redesign tool is described in detail in Chapter II, section B.3 of this thesis. By combining Davenport's Process Innovation Framework with the analytical capabilities of the KOPeR redesign method, limited resources are leveraged to produce tangible results that can be applied broadly and implemented quickly.

a. Describe the Current Process Flow

A graphic model of the Best Value Source Selection process is provided as Figure 8. Figure 8 represents the specific Best Value Source Selection process at SWDIV in its current form. This graphical illustration of the process represents the starting point for measurement-driven inference in this thesis.

The Best Value Source Selection process involves 34 steps, or tasks, that must be accomplished to complete the process as defined by the process boundaries given in this thesis. Each task is represented by a text box that is linked to the next task in a simple, linear process flow. Located next to each text box are the process attributes for

the given task. These attributes include pertinent characteristics that are involved in each task. Each task has the following five attributes as defined below:

1. Agent Role in the process (e.g., Project Lead, Contract Specialist, Operations Assistant),
2. Performing Organization in the process (e.g., Construction Business Line, Contracts Group),
3. IT employed to support the process (e.g., word processor, legacy system),
4. IT employed for communication in the process (e.g., LAN, email). [Note: This does not include phone- and paper-based communications.],
5. IT employed to automate the process (e.g., SPS).

The graphical process model also illustrates feedback loops through which process documents are often returned for editing or rework. Process handoffs are also identified to highlight potential sources of process "friction" that can adversely effect cycle time. (Nissen, 2001)

To illustrate how the process model graphic is to be interpreted, refer to Figure 8. (A larger scale of Figure 8 is provided as Appendix E to this thesis.) The first process task, "Receive Final Plans and Specifications," is accomplished by two agent roles (Project Lead and Contract Specialist). The performing organizations are the Construction Business Line (the Project Lead) and the Contracts Group (the Contract Specialist). IT employed to support this task is none or "manual." IT employed for communication in this task is none or "paper." Lastly, IT employed to automate this task is also "none." This task involves no feedback loops, and the product of this task feeds, or is the predecessor to, tasks two (Prepare Source Selection Plan) and nine (Final Synopsis), as the arrows indicate. A handoff occurs between tasks one and nine. The notations for the other process tasks are illustrated in a similar fashion.

b. Measure the Process in Terms of New Process Objectives

Because it is used as a baseline for comparison with the new process, the existing process is assessed in terms of the same criteria employed for the new design.

Davenport emphasizes that the scope of the old process must be the same as that envisioned for the new one. (Davenport, 1993, pg. 140) The current process should be measured in terms of the new process objectives identified earlier in phase three, "Develop Process Visions."

This research establishes that the objective of the Best Value Source Selection process is to obtain a high quality product or service, at a reasonable price, and in a timely fashion for the customer. In addition, the focus of the process should be on the customer, and the customer's need to be involved early and often throughout the process. The area in which the current process fails most is timeliness.

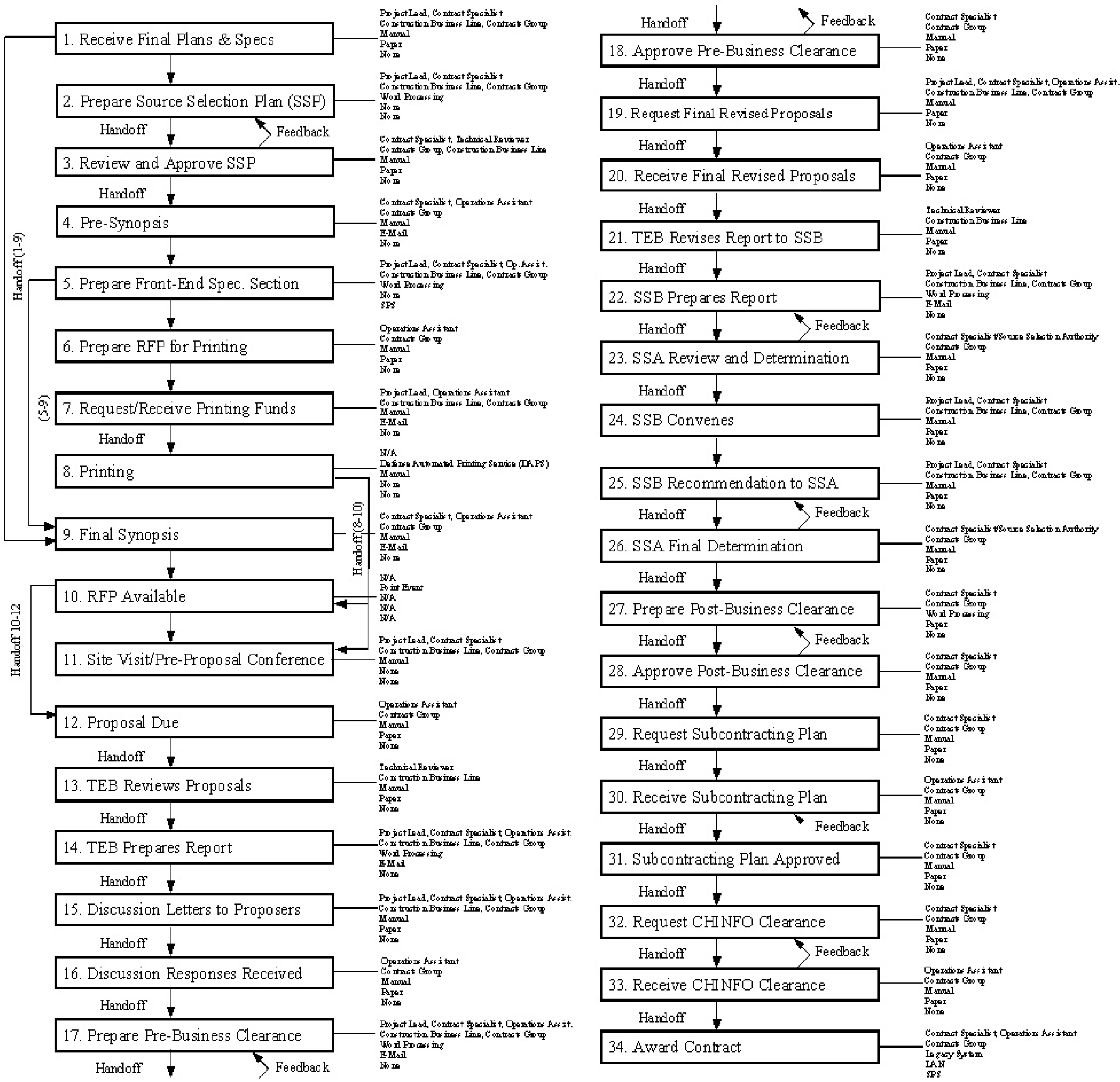

Figure 8. Existing Best Value Source Selection Process. Developed by Researcher.

It frequently takes 210 days for a Federal agency to complete a competitive negotiation. (McCarthy, 1998, pg. 91) While the current SWDIV standard of 146 days may sound good by comparison, this is comparing one manual, non-innovated, non-IT-enabled process cycle time against another. By innovating the Best Value Source Selection process, SWDIV can reasonably anticipate an overall 30% reduction in process time, at a minimum, even with the mandatory 45 days for synopsis and advertisement, and ten days for CHINFO. This would lower the process time from 146 days to just over 100 days. By this measure alone, the current process is sorely lacking, and is a prime candidate for process innovation. This fact is clearly demonstrated numerous times throughout this thesis.

c. Assess the Process in Terms of the New Attributes

As mentioned previously, Davenport suggests that the existing process is assessed in terms of the same criterion employed for the new design. (Davenport, 1993, pg. 140) One of those criterion are process attributes. The process attributes that are established for the new process design are provided in Chapter III, section B.3.e. The entire list of new attributes will not be reiterated here; however, it includes attributes such as: a fully automated knowledge management application, facilitates group collaboration, provides standard report templates, Internet enabled and Web-based, provides a shared data warehouse and real-time access to information. These are only a few of the more pertinent new process attributes that the current process is measured against.

The current Best Value Source Selection process simply does not possess these attributes, or any of the other new process attributes not listed here. The current process is manual, paper-based, non-innovated, and non-IT-enabled. While some word processing and email technologies may be used, the current process does not meet any of the attributes developed for the innovated process. This comes as no surprise. By definition, process attributes "constitute a *vision* of a process operation in a *future state*." [Emphasis Added] (Davenport, 1993, pg. 129) Therefore, as measured in terms of the

new process attributes developed in this thesis, the current Best Value Source Selection process reflects none, and is an excellent candidate for process innovation.

d. Identify Problems with the Process (KOPeR)

The existing Best Value Source Selection process is used as a baseline for analysis. The process is measured in terms of KOPeR metrics. Measurements obtained from the KOPeR analysis of the process are summarized in Table 12. Based on the characteristics of the Best Value Source Selection process baseline, KOPeR identifies six potential areas of process pathologies.

Measure	Measurement – Pathology	Potential Performance Implications
Parallelism	1.000 – sequential process	Cycle time
Handoffs fraction	0.794 – process friction	Cost and cycle time
Feedback fraction	0.206 – feedback looks OK	Cost and cycle time
IT Support fraction	0.206 – inadequate IT support/manual process flow	Cost and cycle time
IT Communication fraction	0.206 – inadequate IT communications/largely paper-based process	Cycle time
IT Automation fraction	0.059 – labor-intensive process/nearly no automation	Cost and cycle time

Table 12. KOPeR Pathologies of the Best Value Source Selection Process Baseline. From Ref. Nissen, 2001.

Table 12 is divided into three columns. The first column identifies the process measures. The second column identifies the fractional measures, which are used to normalize the raw counts by process size to enable "apples to apples" comparisons among processes, and the respective process pathologies. The third column identifies the potential performance implications of each of the identified process pathologies. The six potential process pathology areas that KOPeR identifies are discussed in greater detail below.

KOPeR identifies the existing Best Value Source Selection process as a sequential, or linear, process. Note that the parallelism measurement (1.000) reflects the serial layout and linear appearance of the process, and indicates its unit value represents a theoretical minimum. (Nissen, 1998) By their very nature, sequential processes take longer to complete than parallel processes because each step is dependent upon the proceeding, or predecessor, step. This fact is clearly illustrated in Figure 8 to this thesis. The performance implication of a sequential process is long cycle time, which is listed in column three of Table 12.

KOPeR identifies excessive process friction as a pathology because of the number of handoffs that are associated with the process. Each time a handoff occurs, process friction is increased resulting in longer cycle time. Handoffs take time, and add complexity and opportunities for error to the process. Thus, transferring information between roles or among organizations takes time and produces rework, particularly in a paper-intensive process, and as such increases both cycle time and cost. Feedback loops can also result in increased cycle time and cost, just like excessive handoffs. However, KOPeR finds that the current Best Value Source Selection process has an appropriate number of feedback loops for the size of the process.

IT support and communication for the Best Value Source Selection process are inadequate, based on KOPeR's analysis. This is due primarily to the fact that most of the current process tasks are accomplished manually and are largely paper-based. Manual process flows can be very costly and time consuming. The only exception to the manual processing of tasks in the current system is the use of a word processing application (such as Microsoft® Word) or a similar legacy system. Paper-based communications are slower, less efficient, and more prone to error than IT-based communications. Currently, the Best Value Source Selection process utilizes mostly paper as its preferred communication medium. The exceptions to this are the use of email and other electronic, LAN-based communication (such as file transfer protocol or FTP).

Lastly, the lack of adequate IT automation is identified by KOPeR as a process pathology. While the Standard Procurement System (SPS), otherwise known as Procurement Desktop – Defense (PDD), is currently used to automate the preparation of the solicitation (or "front-end" specification section) and to award the contract document, it does not work in concert with the other tasks and subprocesses as it is currently utilized by SWDIV in its present version (v4.1e). This is due in part because of the inherent shortcomings in the SPS application, and in part because of certain NAVFAC legacy applications that are not compatible with SPS's architecture. The end result is that the existing process is very labor intensive, and human labor is notoriously more costly and time consuming than selectively applied IT automation. KOPeR provides one word of caution with regard to IT automation. It suggests that, "IT automation first requires substantial infrastructure in terms of support and communication." (Nissen, 2001) The researcher agrees with this supposition, and addresses these same issues in this thesis with regard to the use of IT automation.

e. Identify Short-Term Improvements in the Process

Unless they are clearly distinguished, undertaking innovation and improvement activities concurrently can be confusing, but in a large organization, such as SWDIV, it may be the only way to achieve short-term benefit. (Davenport, 1993, pg. 141) In any case, care must be taken to ensure that the process improvement tools and techniques selected fit the overall objectives of the innovation effort. (Davenport, 1993, pg. 150)

Five traditional approaches to process improvement are provided by Davenport; activity-based costing; process value analysis; business process improvement; information engineering; business process innovation. (Davenport, 1993, pg. 142) None of the traditional process improvement approaches are likely to yield radical business process innovation. Although they may share characteristics with process innovation, all begin with the existing process and use techniques intended to yield incremental change. None of the process improvement approaches address the envisioning, ennoblement, or implementation of radical change necessary for innovation. (Davenport, 1993, pp. 150-

151) Therefore, these innovation approaches are most appropriately used to complement, not supplant, the components of innovation.

These traditional approaches to process improvement require detailed information of the existing process. For example, activity-based costing (ABC) requires an analysis of the organization down to the lowest level of activity across the entire organization. Opportunities for process improvement arise from a detailed analysis of the current process operations, and problems are documented during the course of understanding the process activities. It is this level of scrutiny that gives rise to opportunities for streamlining and rationalization. (Davenport, 1993, pg. 144) However, such a detailed examination of the Best Value Source Selection process and the SWDIV organization is beyond the scope of this thesis and is left for future research.

Any change that reduces cycle time or cost will improve the process. Two short-term process improvements that do not require such rigorous process examination are de-linearization and empowerment. De-linearization involves rearranging the current sequential process activities into parallel sets of tasks wherever possible. Process parallelism has positive performance effects in terms of cycle time and costs. When tasks are performed in parallel, as opposed to sequentially, cycle time is reduced and downtime is eliminated. Reducing the number of feedback loops (e.g., reviews and approvals) will also decrease cycle time by eliminating the frequency of minor editorial changes to documents.

This leads to the second short-term process improvement, empowerment. By reducing the amount of oversight, and consequently the number of reviews and approvals throughout the process, and empowering the selection board to perform its own quality assurance on its documents, the number of feedback loops will be reduced, and cycle time will drop accordingly. While reviewing the board’s work is not trivial, particularly to the Contracting Officer who will ultimately be signing the award documents, there are often too many levels of review and they occur too frequently. If the review and approval process evolves to the point where no value is added to the process or the end product by further review, then it is reasonable to assume that some

amount of review can be safely eliminated from the process. Empowering the selection board to perform their own quality assurance and reducing the number and frequency of reviews reduces cycle time with no appreciable loss of quality.

f. Assess Current Information Technology and Organization

Davenport notes that the analysis of the current process is incomplete without assessing the existing information technology and organizational environment. An assessment of the existing information technology architecture includes existing applications, databases, technologies, and standards. Assessment of the organization includes job descriptions, skills inventory, and knowledge of recent organizational change. (Davenport, 1993, pg. 140)

Currently, there is no specified standard IT architecture at SWDIV with regard to performing Best Value Source Selections. However, given that the Microsoft® Office suite is the only installed and supported software of its kind used by the organization, Microsoft® Word is used for document generation and word processing. Also, Microsoft® Excel and Access are sometimes used as ad-hoc project databases to capture, record, and compare various evaluation criterion, and produce certain reports. The technology used to perform the Best Value Source Selection process is commercial off-the-shelf (COTS) and is LAN-enabled, but typically not Internet-based.

No group collaboration software (such as Lotus® Notes) is available to the general employee population. The closest example of collaborative document generation and processing performed at SWDIV is accomplished by utilizing Word's "track changes" functionality to highlight the changes suggested by one board member, and emailing the Word document to another member for their review and input. This example does not provide real-time functionality, which is identified as a new process attribute in this thesis, and is also a serial process, rather than a parallel or concurrent process, which is more highly desired.

Brief job descriptions for the process roles identified in this thesis are provided below. *Project Leads* typically have an engineering background and are responsible for the execution of the overall project. Project Leads interface with the

customer, have a large degree of control over the project budget, and make many of the critical decisions with regard to project planning and execution. The Project Lead's top priorities are satisfying the customer and keeping the project schedule on track.

Contract Specialists typically have a business background and are ultimately responsible for the legal and regulatory aspects of the project. More specifically, it is the Contract Specialist that writes the contract, solicits the project to the contractor community, makes the award selection (in concert with other members of the selection board who may represent various disciplines) and binds the government to a contractual obligation. The Contract Specialist is also concerned with satisfying the customer and executing the project in a timely fashion; however, ultimately it is the Contract Specialist's primary responsibility to ensure that the acquisition of a product or service for the government is carried out in accordance with all applicable laws and regulations.

Operations Assistants provide clerical support to the entire acquisition team. They are involved in drafting letters and other procurement documents, reproduction, posting advertisements and solicitations to the Internet (as applicable), sending and receiving mail correspondence, and other miscellaneous administrative tasks. Operations Assistants have various backgrounds, but typically possess clerical skills, some computer skills, and are generally familiar with the contractual side of the procurement processes.

While other disciplines occasionally play a role in the Best Value Source Selection process, these three roles are involved in every iteration of the process, and perform the most critical functions. Additional information regarding recent organizational change is provided in Chapter II, section A.2 of this thesis.

The current SWDIV IT infrastructure is inadequate to support radical process redesign and is unable to achieve the new process objectives and attributes proposed in this thesis. Investment in new IT will be required to achieve quantum-level improvements in the Best Value Source Selection process. However, the SWDIV organization does possess the skills and knowledge necessary to understand, implement,

and assimilate the redesigned process, although some cultural resistance may be encountered.

C. SUMMARY

The methodology of research for this thesis includes a literature review of books, manuals, regulations, the World-Wide Web, periodicals, SWDIV Standard Operating Procedures (SOPs), and other resources. A brief overview of papers germane to this research reveals that no relevant studies have been conducted that are specific to the Best Value Source Selection process. Specifically, no prior research has been conducted regarding the Best Value Source Selection process as it is currently being utilized by SWDIV. A case study of the J&A process, which is very similar in size and scope to the Best Value Source Selection process, is presented to demonstrate how processes can be innovated to realize dramatic improvements by utilizing an intelligent redesign agent, such as KOPeR, within the boundaries of Davenport's Process Innovation Framework. The Best Value Source Selection process is defined in specific terms by describing the duties and responsibilities of the various process participants, as they are defined and described by the SWDIV SSP Model.

This thesis utilizes Davenport's Process Innovation Framework to analyze the Best Value Source Selection process for existing pathologies and innovation opportunities. Phases one through four are presented in this chapter. The suitability of this process for innovation is confirmed in phase one of the model. The process boundaries are determined, the strategic relevance of the process to SWDIV is assessed, high-level judgments of the health of the current process are made, and the cultural and political environments are considered.

In phase two of the model, process enablers and constraints are researched and evaluated. A baseline process is used to better understand and evaluate the current Best Value Source Selection process. The specific baseline analyzed in this thesis is the dual boards (TEB/SSB), written proposals process format that is illustrated in Appendix D to this thesis. This baseline process is comprised of 34 steps, or tasks, and requires 146

days or approximately five months to complete. Human and technological enablers and constraints for process innovation are identified. The primary drivers in determining the constraints that will limit the successful implementation of the process solution chosen for the Best Value Source Selection process are *cost* and *available funding*. To implement the process innovation solution proposed in this thesis will require substantial financial investment. These funds are not earmarked, and would likely have to come at the expense of some other operating budget line item. *Security* of the process information and documents is also a key constraint that is identified.

Process Visions are developed in phase three of the model. The existing Federal government, DoD, NAVFAC, and SWDIV strategies are assessed. In short, it is the strategy of all of these agencies to provide the best value procurement in a timely fashion for their customers. This strategic vision is well suited to the process needs for the Best Value Source Selection process. Internal and external customers are consulted to determine their needs and perceived process objectives. The current Best Value Source Selection process is used as the performance benchmark for the development of performance objectives and attributes of the redesigned process. The resulting performance objectives and attributes are provided as bullets in this phase.

In phase four of the Davenport model, the current process is examined in depth so that a clear understanding of the existing process can be realized. A graphical model of the current process is provided as Figure 8 to this thesis. It is modeled after the KOPeR metrics, and is the starting point for measurement-driven inference used in this thesis. The KOPeR metrics, or attributes, are agent role, performing organization, IT support, IT communication, and IT automation. The current Best Value Source Selection process is assessed in terms of the new process objectives and attributes developed in phase three. The current process falls far short of the new process objectives and attributes, and is an excellent candidate for process innovation. KOPeR is utilized to identify potential problems, or pathologies, with the existing process. KOPeR identifies several potential process pathologies: sequential process structure, process friction, inadequate IT support, inadequate IT communication, inadequate IT automation.

Two potential short-term process improvements are identified. De-linearization and employee empowerment do not require the same level of rigorous process examination as most traditional approaches to process improvement. These two improvements are relatively simple to implement and have a high probability of success with little associated cost or risk. Lastly, the current SWDIV IT infrastructure and organization are assessed. The current SWDIV IT infrastructure is inadequate to support radical process redesign. Investment in new IT will be necessary to achieve quantum-level improvements in the Best Value Source Selection process. However, the SWDIV organization currently possesses the skills and corporate knowledge necessary to understand, implement, and assimilate the redesigned process, although some cultural resistance may be encountered.

Phase five of Davenport's process innovation framework, "Design and Prototype of the New Process," is documented in the following chapter.

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IV. REENGINEERING POSSIBLITIES FOR BEST VALUE SOURCE SELECTION THROUGH PROCESS INNOVATION

A. PHASE V: DESIGN AND PROTOTYPE OF THE NEW PROCESS

The final phase of Davenport's process innovation framework includes the steps necessary to design and prototype the new process. Davenport's model encompasses not only the design of the new process, but also the development of a migration strategy and implementation of the new process within a new organizational structure. (Davenport, 1993, pg. 154) Table 13 provides an outline of the steps in phase five. Implementation and testing of the new process, as well as the implementation of new organizational structures and systems, is beyond the scope of this thesis. This research addresses the first two steps in phase five of Davenport's model: brainstorm redesign alternatives and assess the feasibility, risk and benefit of the proposed new process design.

Brainstorm Redesign Alternatives
Assess the Feasibility, Risk and Benefit of the Proposed New Process Design
Prototype the New process Design
Develop a Migration Strategy
Implement New Organizational Structures and Systems

Table 13. Design and Prototype of the New Process. From Ref. Davenport, 1993

1. Brainstorm Redesign Alternatives

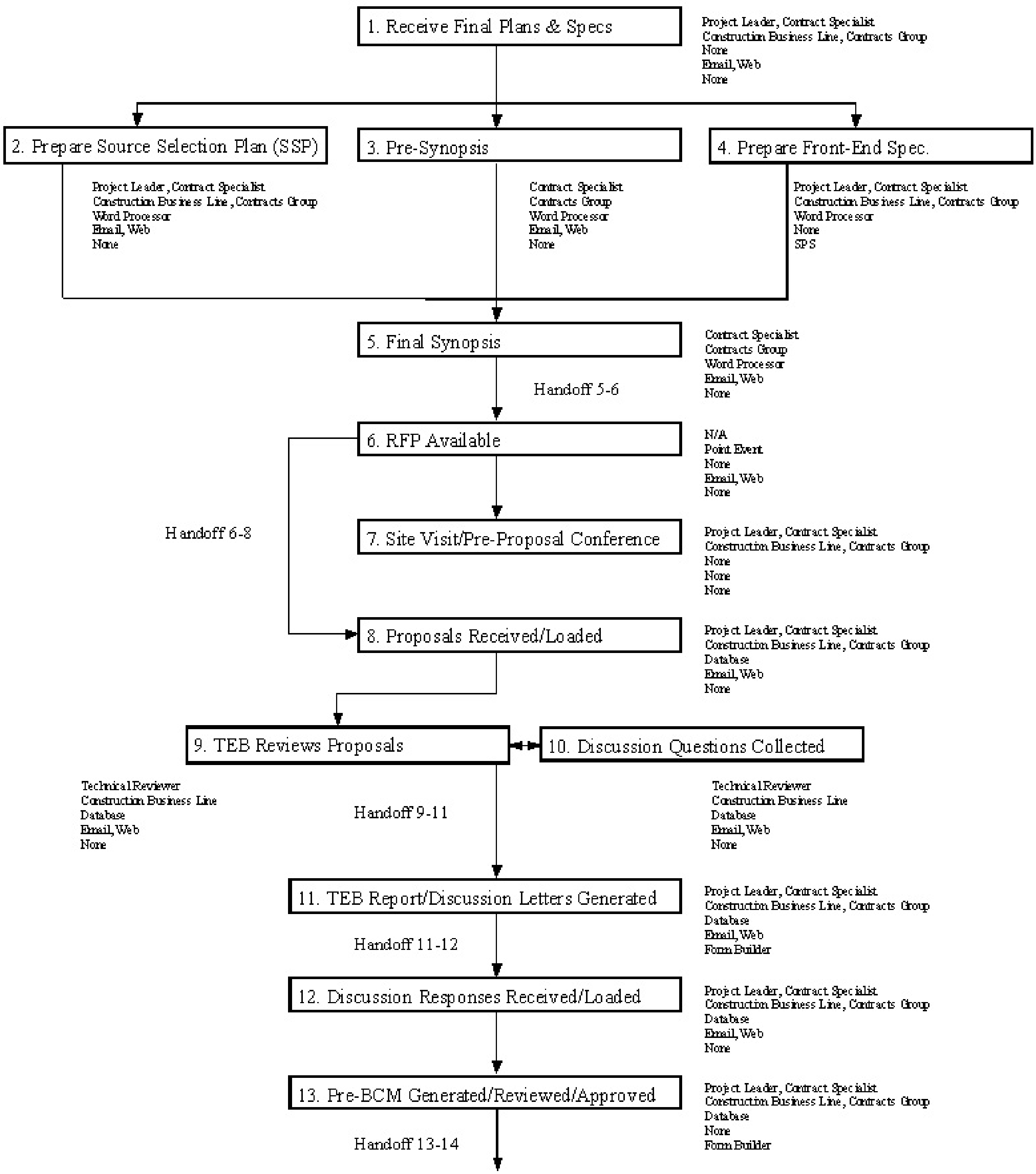
The first step in phase five is to brainstorm redesign alternatives. For brainstorming to be successful, all possible redesign alternatives must be considered, however unlikely their success. Design innovation is best accomplished in a series of workshops, and brainstorming is an effective means of surfacing creative process designs. (Davenport, 1993, pg. 154) The process stakeholders, which are identified in phase three, brainstorm the potential redesign alternatives based on the results of, and specific process attributes identified in, the preceding phases. Inclusion of these

stakeholders can result in an unwieldy redesign team; however, time lost achieving large group consensus can be recovered by shorter implementation times. (Davenport, 1993, pg. 154)

Many external constraints, such as Federal, DoD, and agency regulations, the existing organizational structure, and the skills and abilities of the existing workforce must be considered when selecting the best redesign alternative. It is the objective of this thesis to propose a reengineered Best Value Source Selection process that is innovated through the selected use of information technology. However, the proposed new process must be able to function, at least in the short-term, within the existing SWDIV organizational structure and with the existing SWDIV workforce. Taking these factors into account, one possible redesign alternative is presented and discussed in the following section.

2. Test Results of the Proposed New Process Design (KOPeR)

According to Davenport, "graphic representation of a process design can be extremely helpful in understanding process flows." (Davenport, 1993, pg. 154) Therefore, the proposed redesign alternative for the Best Value Source Selection process is graphically illustrated in Figure 9. The proposed redesign alternative is developed through a combination of process actions and recommendations generated by KOPeR, consultation with the current process stakeholders, literature review and analysis, and ideas developed independently by the researcher as a result of executing Davenport's Process Innovation Framework. The proposed redesign alternative takes advantage of available information technology while acknowledging the inherent limitations and constraints imposed by regulation and the existing organizational structure. The proposed redesign alternative strikes a balance among limited resources, process constraints, cultural and political realities, short-term improvements, available information technology, and the performance objectives and specific process attributes identified in phase three, as well as many other factors.


1. Receive Final Plans & Specs
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
None
Email, Web
None
2. Prepare Source Selection Plan (SSP)
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Word Processor
Email, Web
None
3. Pre-Synopsis
Contract Specialist
Contracts Group
Word Processor
Email, Web
None
4. Prepare Front-End Spec.
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Word Processor
None
SPS
5. Final Synopsis
Contract Specialist
Contracts Group
Word Processor
Email, Web
None
Handoff 5-6
6. RFP Available
N/A
Point Event
None
Email, Web
None
Handoff 6-8
7. Site Visit/Pre-Proposal Conference
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
None
None
None
8. Proposals Received/Loaded
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Database
Email, Web
None
9. TEB Reviews Proposals
Technical Reviewer
Construction Business Line
Database
Email, Web
None
10. Discussion Questions Collected
Technical Reviewer
Construction Business Line
Database
Email, Web
None
Handoff 9-11
11. TEB Report/Discussion Letters Generated
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Database
Email, Web
Form Builder
Handoff 11-12
12. Discussion Responses Received/Loaded
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Database
Email, Web
None
13. Pre-BCM Generated/Reviewed/Approved
Project Leader, Contract Specialist
Construction Business Line, Contracts Group
Database
None
Form Builder
Handoff 13-14

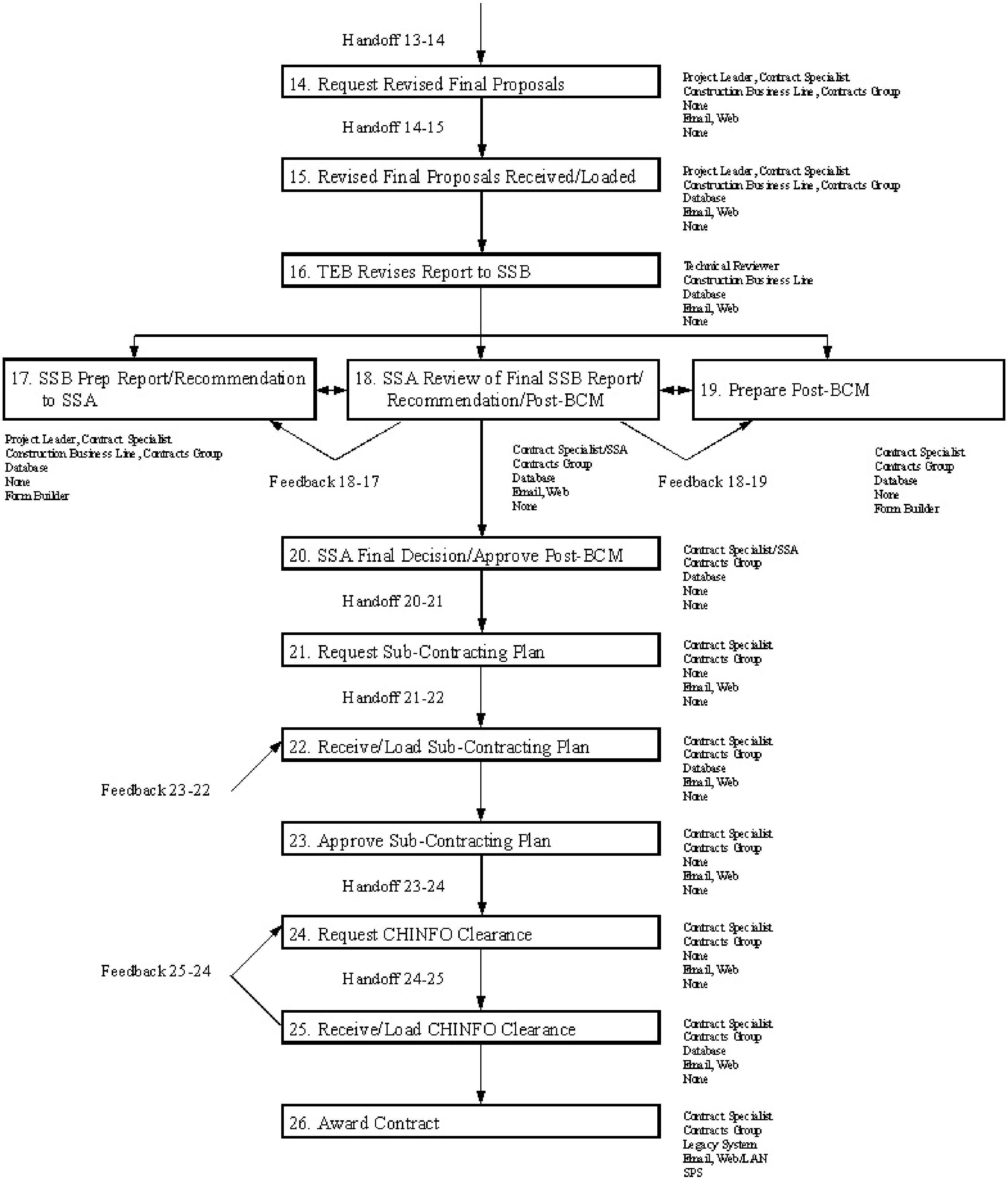


Figure 9. Proposed Redesign Alternative. Developed by Researcher

At first glance it may not appear that the redesigned process is much less linear than the existing process. However, in three specific areas, tasks are performed concurrently where they are performed sequentially in the existing process. The areas that are identified for parallel processing are: 1) preparation of the SSP, pre-synopsis notification, and front-end specification, 2) collection of discussion questions during the TEB review of proposals, and 3) preparation of the SSB report/recommendation to the SSA, preparation of the post-BCM, and the SSA's review of the final SSB report/recommendation and the post-BCM.

Information technology allows for the concurrent preparation of the SSP, pre-synopsis notification, and front-end specification. Because parts of each of these documents are common to all, IT allows for real-time group collaboration and review of these common sections, and cut-and-paste capability from a common database or data warehouse allows for quicker, more efficient document composition with fewer transposition errors. IT also makes it possible for the TEB to collect, store, and compile possible discussion questions as the proposals are being reviewed. This technology allows the reviewers to record their questions while they are fresh in their minds, and accommodates collaborative review, editing, and elimination of duplicative questions. Discussion letters can be generated from the database by a form builder or report template technology, based on a pre-determined format, so that the TEB members need not spend time composing the discussion letters. Once the discussion letters have been generated, they can be distributed to the proposers electronically either by email or the Web. The redesigned process leverages IT communication technology to distribute and receive documents that are distributed in paper form in the existing process.

Lastly, the SSB report/recommendation and post-BCM are generated with the help of IT support tools, and are concurrently reviewed by the SSA in real-time as they are being composed so that feedback can be provided in a timely fashion, and so there is minimal wasted effort expended in recomposing these documents and passing paper back and forth between writers and reviewer. By employing this technique of concurrent review and feedback, enabled by IT support and communication, the final

report/recommendation is acceptable the first time out, and is not subject to "multiple chops" and revisions that are typical with the existing process. This saves time, money, and frustration relative to the existing Best Value Source Selection process.

Further parallel processing may be possible, given a relaxation in the statutory and regulatory constraints that currently exist which demand that certain tasks be completed before the next task can commence. Also, additional investment in IT automation, well beyond the level of investment proposed in this redesign, may also help to reduce the degree of linear processing. However, even without further improvements in de-linearization, the redesigned process is far less sequential and more streamlined than the existing process.

The number of handoffs is greatly reduced from 27 in the existing process to only ten in the redesigned process. This reduction is due almost exclusively to the use of a central database or shared data warehouse and electronic forms of communication and data transmission. As an example, in the existing process, when the TEB, which is typically made up of technical reviewers, completes a phase of their review, the proposals and related materials are physically handed over to the SSB, which is generally composed of different members and disciplines. This constitutes a handoff in the existing process because physical items are literally "handed off" from one group to the next.

In the redesigned process, all of the data, including the contractors' proposals, are loaded into, and maintained in, a shared data warehouse. Certain access restrictions and controls are in place to limit access to only those parts of the data that are germane to a given group or individual at a given stage in the process. However, all of the data is continually maintained electronically, so that no physical handoff need take place. When one group is finished with their review, they document their review as required, which is stored in the database, and the next group or individual takes over the process from there. This same attribute of the redesigned process also accommodates parallel or concurrent processing, as described above, as many individuals can review the same proposals at the same time. By selectively applying IT support and communication to the Best Value Source Selection process, handoffs are limited to exchanges of information outside of the

organization, such as posting the synopsis to the Commerce Business Daily or transmitting discussion questions to the proposers. This decreases process friction by eliminating several handoffs.

KOPeR indicates that the "feedback looks OK" in the existing process with seven loops. However, the feedback loops are reduced to four in the redesigned process through parallel task execution and the use of IT to facilitate concurrent document composition and review. Another aspect of the redesigned process that positively contributes to the reduction of feedback loops is the empowerment of source selection board members to review their own work and make their own decisions with minimal oversight. Wherever possible, review and approval tasks are removed from the process and board members are given discretion and responsibility to make their own decisions. These changes result in a 50% improvement in the number and frequency of feedback loops in the redesigned process.

This research demonstrates how IT support is leveraged in the redesigned process to produce a more seamless process flow. Databases and shared data warehouses, as well as word processors and legacy systems, are utilized to provide real-time, simultaneous, geographically independent access to data required to perform a Best Value Source Selection. By providing secure portals to a shared database, source selection team members from many disciplines, physically located in different places, performing dissimilar functions within the process, have controlled access to the same information at any time day or night. With a Web-enabled database, secure access to the source selection data can be obtained from nearly anyplace in the world at any time. This aspect of the redesigned process makes it possible to leverage the expertise of individuals from around the world without them having to leave their home office or shun their other projects for the duration of the selection process. This not only increases the efficiency of the source selection in question, but also the use of the team members' time, and saves money by not having to sequester the team members in one physical location.

Without the use of IT communication tools, primarily email and the World-Wide Web, much of the rest of the process innovation would be impossible. IT communication

is an enabling technology that can be used to leverage other IT tools, such as the shared data warehouse or the Standard Procurement System (SPS). By transmitting solicitation documents, letters, proposals, and other documents electronically instead of via “snail mail,” a significant amount of time and money is saved. However, this is not possible without IT communication technology. The Internet and World-Wide Web are revolutionizing the way organizations communicate both internally and externally. However, the existing Best Value Source Selection process does not fully take advantage of this enabling technology. More than any other single aspect of the redesigned process, IT communication reduces the overall cycle time.

Information technology automation is improved in the redesigned Best Value Source Selection process. While SPS is used to automate the existing process, it only affects two tasks: preparation of the solicitation and contract award. SPS is utilized to perform these same two tasks in the redesigned process, but in addition to SPS, form builder or report template technology is used to automatically compose several documents, such as the TEB report, discussion letters, pre-BCM, SSB report, and post-BCM. These are the most obvious candidates for automated report generation; however, depending on the specific technology employed, its application may be broader. By automating the report composition process, cycle time is lowered, the number of human errors is reduced, and board members’ time can be utilized more effectively.

Table 14 summarizes measurements obtained from KOPeR for the existing, or baseline, Best Value Source Selection process and the redesigned process. Note the substantial improvement of the redesigned process measurements over the baseline measurements.

Measure	Existing Process Measures	Redesigned Process Measures	Result of Redesign
Parallelism	1.000	1.300	Less Sequential/Lower Cycle Time
Handoffs fraction	0.794	0.385	Less Process Friction
Feedback fraction	0.206	0.154	Less Checking and Complexity
IT Support fraction	0.206	0.731	Less Manual Process Flow
IT Communication fraction	0.206	0.769	Less Paper-Based Communication
IT Automation fraction	0.059	0.231	Less Manual Labor/More Automated

Table 14. KOPeR Measurements for the Best Value Source Selection Process. Developed by Researcher.

Although the redesigned process is still mostly sequential, due to the statutory and regulatory constraints that currently exist which demand that certain tasks be completed before the next task can commence, its parallelism is much higher than the existing process baseline. This fact is illustrated in Table 14 above. The larger the number for parallelism, the less sequential the process flow. The baseline is perfectly sequential, with a KOPeR measure of 1.000. The redesigned process has a parallelism measure of 1.300. The increase in parallelism is directly attributable to the process redesign made possible through the selected application of IT. Also, the tasks that are performed concurrently in the redesigned process are still performed more quickly and efficiently, as described in this section, relative to the baseline process by leveraging IT to reduce the time required to perform each individual task.

The KOPeR measures for the redesigned process clearly indicate that handoffs and feedback loops are reduced. The handoffs fraction measure is 50% lower than the baseline. The feedback fraction measure, which KOPeR already considers to be “OK” in the baseline process, reflects an improvement of 25%. This level of improvement in both handoffs and feedback loops should translate directly into a substantial reduction in process cycle time.

IT support, communication, and automation in the redesigned process reflect quantum improvements compared to the baseline Best Value Source Selection process. Specifically, IT support improves by 255% relative to the baseline process, which translates into a shorter process cycle time and lower cost by making the process more efficient. IT communication improves by 273%, which reduces cycle time by decreasing the time that is required to communicate information or data from person to person or through a paper-based process. IT automation, while having the lowest of the IT KOPeR measures at 0.231, reflects the most radical improvement at 292% compared to the baseline process.

Each of these process measures are radically improved through the selected application of IT as described above, and by targeting the redesign process attributes identified in phase three. Some of these process attributes are that the process facilitates group collaboration, increases process efficiency and speed, provides for standard report template formats, provides real-time access to information through a shared data warehouse, and is Internet enabled and Web-based to name a few. The redesigned process acknowledges these process attributes and takes advantage of existing IT solutions to innovate the Best Value Source Selection process. This thesis provides two specific, potential recommendations for an IT solution in Chapter V, section C.

3. Assess the Feasibility, Risk and Benefit of the Proposed New Process Design

In order to assess the feasibility of the new, redesigned process, Davenport suggests that several analyses be performed and that the redesigned and existing processes be compared in terms of structure, technology, and organization to fully understand the implications of each alternative. Analysis of the processes need not be rigorous, but a high-level analysis of the processes should be part of the basis for selecting the optimum redesign model. (Davenport, 1993, pg. 156) This section provides a brief, high-level analysis and assessment of the potential benefits, risks, and feasibility of the proposed new process design.

The potential benefits associated with the redesigned Best Value Source Selection process recommended by this thesis are numerous. The greatest potential benefit to the acquisition community is the significantly reduced process cycle time. As an example, the reduction in process length and the fewer number of sequential tasks is expected to result in decreased cycle time as steps can be performed concurrently and more rapidly as a result of the applied IT enablers. Decreasing the number of handoffs and feedback loops used throughout the process also reduces cycle time, and empowering acquisition team members to perform their own reviews and make decisions autonomously reduces process friction. One of the keys to realizing the full benefit of the redesigned Best Value Source Selection process is empowering the team members by giving them more authority and responsibility for their decisions. The redesigned process has the potential to decrease cycle time, increase quality, and lower acquisition costs.

The four risk factors identified in phase two of this thesis are: cost, existing legacy systems, security, and human fear of change. No funding is identified for the required investments in IT that are necessary for the successful implementation of the redesigned process. The cost of IT includes not only hardware and software purchases, but support and maintenance as well. In fact, it is documented that software maintenance consumes roughly two-thirds of the typical application's total life cycle cost (Leonard, 1997). Because no funding source is identified, cost represents the most significant risk to the successful implementation of the Best Value Source Selection process redesign.

Existing legacy systems represent a risk because significant investment is sunk in these systems and, although they are not numerous nor highly pervasive in the Best Value Source Selection process, they are currently paid for or fully funded, and the users and maintainers of these systems are comfortable with them, making any alternative to them appear as a threat to their existence. Again, because the use of legacy systems is not critical to the functioning of the existing process, the introduction of new IT systems in the redesigned process should not pose a serious problem. Also, one of the legacy systems, FIS, remains a functional, if not minor, part of the redesigned process.

However, the risk of resistance due to the presence of legacy systems within the existing process must be considered.

Security concerns are a serious risk to the acceptance of the redesigned Best Value Source Selection process. It is human nature to trust only that which one can physically see. (This is why falling backward into a stranger's arms while blindfolded is such a traumatic task for most individuals.) It is impossible to "see" information, in the form of electrons or magnetic fluctuations, traveling through communication lines or stored on hard drives. Therefore, when information that is "Source Selection Sensitive" is no longer maintained in a paper medium, security vulnerabilities inherently seem to be greater to most people. In fact, the opposite may be true. While it is very difficult to keep track of every single piece of paper involved in a Best Value Source Selection process at all times, electronic communication and storage media document and maintain a trail of access and custody. With the proper security model, a paperless Best Value Source Selection process can and should be more secure than the existing paper-based process. This level of security is considered in the redesigned process attributes and is built into the redesigned process by taking advantage of the current state-of-the-art 128-bit Secure Socket Layer (SSL) encryption technology.

Finally, there is the risk of human fear of change. This risk is inherent to every organization and is, to some degree, interwoven throughout the other risk factors as well. Fear of change is a common human trait, and is not always easily overcome. People tend to fear that which they do not understand. This fact is proven time and again throughout human history. An excellent example is the idea in the middle ages that by sailing too far West of Europe, one might fall off the edge of the Earth. This is only logical, given that the humans of the middle ages believed that the Earth was flat. This seems ludicrous to humans of the 21st century, but they simply feared what they did not understand. As understanding and knowledge of a subject increases, fear typically decreases. This is why this risk factor must be identified and addressed. By educating the process owners about the redesigned Best Value Source Selection process early and often, the risk of human fear of change becomes less likely to undermine its success.

Based on the analysis of the potential benefits and possible risk factors associated with the proposed new process design, it is the supposition of this researcher that there is a high degree of probability that the implementation of the redesigned process at SWDIV will be successful. This thesis demonstrates that the existing Best Value Source Selection process is an excellent candidate for process innovation and redesign, and that the redesigned process outlined in this research is not only feasible, but also very likely to produce a quantum level of improvement as defined by Davenport's Process Innovation Framework. Because the implementation and testing of the new process is beyond the scope of this thesis, the remaining three steps of phase five are left for future research.

B. SUMMARY

This chapter applies the first two steps of phase five of Davenport's Process Innovation Framework: brainstorm redesign alternatives and assess the feasibility, risk and benefits of the proposed new process design. Using this methodology, this thesis proposes a new Best Value Source Selection process design that strikes a balance among limited resources, process constraints, cultural and political realities, short-term improvements, available information technology, and the performance objectives and specific process attributes identified in phase three, as well as many other factors. The proposed redesigned process is illustrated graphically in Figure 9. The redesigned process addresses and incorporates the following process attributes:

1. De-linearized process tasks,
2. Real-time, universal information access,
3. Group collaboration,
4. Automated form and report generation,
5. Electronic communication and distribution,
6. Empowerment of the acquisition team members,
7. Reduced process friction,
8. Internet enabled and Web-based information exchanges.

KOPeR measures of the redesigned process show it to be a significant improvement over the existing process. The greatest potential benefit to the acquisition community of implementing the redesigned Best Value Source Selection process is the significantly reduced cycle time. In addition to reduced process cycle time, the redesigned process also has the potential to increase quality and lower acquisition costs.

Four risk factors related to the implementation of the redesigned Best Value Source Selection process are identified: cost, existing legacy systems, security, and human fear of change. Of these four, the cost of implementation and support may prove to be the most formidable risk factor, as no funding is identified for the required investments in IT that are necessary for the successful implementation of the redesigned process. However, based on the analysis of the potential benefits and potential risk factors associated with the proposed new process design, there is a high degree of probability that the implementation of the redesigned Best Value Source Selection process at SWDIV will be successful.

V. CONCLUSIONS AND RECOMMENDAITONS

A. INTRODUCTION

The primary objective of this thesis is to explore the possibility of reengineering Best Value Source Selection at SWDIV through process innovation and the selected application of information technology. This research is necessary because the existing Best Value Source Selection process is identified by acquisition professionals as vitally important to SWDIV's ability to fulfill its mission, but is widely recognized as being inefficient, time consuming, and costly. Simply applying new technology to the existing process, without first redesigning the process, is described as "paving the cow paths" by reengineering experts such as Hammer. (Hammer, 1990)

A literature review provides background on the Process Innovation Framework (Davenport, 1993), and how intelligent agents, such as the KOPeR organizational process redesign tool (Nissen, 2001), can be used to innovate a process resulting in quantum-level performance improvements. A thorough review of the current SWDIV Best Value Source Selection process is undertaken, interviews with acquisition professionals are conducted, existing process pathologies and organizational constraints are identified, the KOPeR organizational process redesign tool is utilized to test the redesigned process model, and recommendations for Best Value Source Selection process innovation, and its application utilizing selected information technology enablers, are formulated and identified.

As a result of this research, several important findings are identified. First, the major pathologies are identified for the existing Best Value Source Selection process. These include: 1) sequential process workflow, 2) excessive numbers of handoffs, 3) feedback friction, 4) minimal IT support, 5) inadequate IT communication, and 6) inadequate IT automation. Each of these pathologies is addressed in the redesigned process model. Second, innovation process inhibitors or constraints exist for the current Best Value Source Selection process. Examples of these constraints include cost, existing legacy systems and processes, security, and human fear of change. Third,

change enablers for process innovation are available to assist in the innovation of the Best Value Source Selection process. Change enablers can be technological or organizational in nature. These change enablers include various IT solutions as well as human enablers, such as a positive political climate for change. Fourth, process innovation has the potential to greatly reduce cycle time and cost associated with the existing Best Value Source Selection process. The redesigned process defined and described in Chapter IV offers the opportunity to reduce cycle time by performing more tasks in parallel, reducing process friction, empowering board members to make decisions within their area of responsibility and perform their own quality assurance, automating the process, and other time-saving transformations. Fifth, risk factors are identified and assessed as to their potential impact on the successful implementation of the redesigned process. Sixth, short-term solutions are proposed. These include de-linearization of the process and employee empowerment. De-linearization and employee empowerment do not require the same level of rigorous process examination as most traditional approaches to process improvement. These two improvements are relatively simple to implement and have a high probability of success with little associated cost or risk. Based on these findings, a set of conclusions and recommendations are provided as follows.

B. CONCLUSIONS

This research demonstrates that the DoD acquisition workforce is shrinking rapidly, and will continue to do so in the coming years as budgets continue to be reduced and large numbers of the workforce retire. SWDIV is not immune to this trend in the acquisition workforce. In conjunction with this trend is the growing reliance on Best Value Source Selection acquisition methods for procuring goods and services for the war fighter. In its current form, this acquisition process is more labor intensive and cumbersome than the lowest bid process that was once common at SWDIV. During the same period, the workload has not been reduced commensurate with the reduction in the workforce. This fact is clearly demonstrated in this thesis. These seemingly opposing trends – fewer acquisition employees, no reduction in workload in real terms, and

reliance on a more cumbersome, time consuming acquisition process – bring SWDIV to a critical crossroad. It can choose to continue to do business the same way it has in the past, or it can innovate the Best Value Source Selection process to realize quantum-level improvements in cycle time and cost.

While acknowledging and addressing the potential constraints and risks involved, this thesis demonstrates that the Best Value Source Selection process can be redesigned in a manner that offers good potential to achieve the goals of this research – achieving dramatic improvements in process cost, quality, and speed. By selectively applying existing, commercial off-the-shelf IT, this research tangibly demonstrates the potential benefits of innovating the Best Value Source Selection process. While many process innovation change enablers are identified as catalysts to this innovation initiative, the most significant change enabler is IT. Recent advances in IT and the Web provide opportunities for process innovation that could only be dreamed of previously. Processes that use IT capabilities to implement a redesign alternative can realize quantum-level benefits over existing processes. Therefore, this research identifies IT as the backbone of the redesigned process. The redesign alternative presented in this thesis cannot be successfully implemented without the use and proper application of IT.

This thesis presents one process redesign alternative for the Best Value Source Selection process. The goal of this redesign is to reduce cycle time and cost by increasing the efficiency of the process. Compared with the existing process, the redesign is less sequential, has fewer handoffs and feedback loops, increased IT support, communication, and automation. These attributes offer good potential for the kind of dramatic performance improvement sought through process innovation as defined by Davenport. (Davenport, 1993, pg. 10) However, according to Davenport, not all redesign transformations can be accomplished at once. (Davenport, 1993, pp. 158-159) A migration plan is required for implementation of any redesign alternative. A good migration plan aids in the successful implementation of a redesign alternative, while a poor migration plan has the potential to undermine even the best, most well thought out redesign alternative. (Davenport, 1993, pg. 158)

Designing and implementing a migration plan for the Best Value Source Selection process redesign alternative is beyond the scope of this thesis. However, short-term solutions such as de-linearization and empowerment, as described in this thesis, can mitigate some of the existing process pathologies. It should be noted that in order for the Best Value Source Selection process redesign model to achieve its full potential, the redesign must ultimately be implemented in its entirety and not simply in a piece meal or a la carte fashion.

The most significant risk identified in this thesis to the full and successful implementation of the redesigned process is cost. Without an exhaustive cost/benefit analysis, which is beyond the scope of this thesis, this research does not conclusively demonstrate that the benefits of implementing the redesigned Best Value Source Selection process outweigh the investment required to implement the solution. However, this thesis successfully demonstrates that the current process is dysfunctional and unsustainable in its current form, and fits the profile of a prime, potential candidate for process innovation redesign. Analogous examples provided in this thesis demonstrate that the savings in cycle time and cost proposed as a result of this process redesign are not only achievable but also common, given the proper organizational support and a robust migration strategy and implementation plan. Specific recommendations are provided in the following section.

C. RECOMMENDATIONS: POTENTIAL SOLUTIONS UTILIZING INFORMATION TECHNOLOGY

Based on the conclusions above, it is recommended that SWDIV implement and test the redesign alternative presented in this thesis. The innovation analysis conducted in this thesis focused specifically on the SWDIV Best Value Source Selection process and organization and offers excellent potential to effect a quantum reduction in cycle time and cost for the Best Value Source Selection process. It is recommended that an Integrated Process Team (IPT), consisting of SWDIV, customer, and funding organization representatives, be formed to conduct this initiative. A migration plan, in

accordance with Davenport's PIF, is recommended for implementation of the redesigned process. This migration plan should be designed such that it causes a minimum amount of disruption to the organization.

Migration from the current process environment to the new design can be very disruptive to an organization if it is not thoroughly thought through. A pilot program is recommended to start the migration process. Once established, the pilot program should be fielded at a few selected sites within SWDIV. The overall goal of the pilot is to achieve full implementation of a successful redesign, not merely to test the pilot. (Davenport, 1993, pg. 158) Once the pilot has been thoroughly tested, refined, and proven ready for general deployment, it should be followed by a phased introduction approach to the rest of the organization. (Davenport, 1993, pg. 158) This approach is recommended because it is less disruptive than a sudden "cut over."

It is recommended that the cost risk associated with this process redesign and implementation be further evaluated. A thorough cost/benefit analysis is recommended for the redesigned Best Value Source Selection process and associated IT investments. The analysis must include all costs required to implement as well as upgrade and maintain SWDIV's IT infrastructure to a level in which full implementation is possible. Based on the outcome of this analysis, it is recommended that the Best Value Source Selection redesigned process implementation plan be revisited and assessed for continuance or termination. If the redesign alternative proposed in this thesis proves to be too costly for full implementation based on a thorough cost/benefit analysis, it is recommended that other process redesign and IT alternatives be identified and analyzed.

Implementation of the short-term solutions proposed in this thesis, based on the identified pathologies in the current Best Value Source Selection process, is recommended. Implementation of these relatively simple remedies has the potential to immediately improve the process. Process customers can rapidly benefit from the short-term improvements to the Best Value Source Selection process. However, long-term benefits resulting from the implementation of radical redesign improvements cannot be realized until the redesigned process is fully implemented.

Finally, because the Best Value Source Selection process is similar across most DoD acquisition organizations, it is recommended that DoD conduct a similar review of the redesigned Best Value Source Selection process presented in this thesis.

Based on these recommendations, two potential IT solutions are proposed below. While these solutions do not represent an exhaustive list of the potential IT solutions available, the researcher believes that they do represent the two best potential IT solutions for the successful implementation of the Best Value Source Selection process redesign as proposed in this thesis. The researcher has no personal or financial interest in either of the proposed IT solutions, nor any personal or financial bias against any potential IT solution not included in this thesis.

1. Commercial Off-The-Shelf Product

The first proposed, potential IT solution is a commercial off-the-shelf (COTS) automated, Web-based source selection application called DecisionPoint. DecisionPoint is a product of IDS, Inc., which is based in Chantilly, VA. DecisionPoint is a fully automated knowledge management application that was first deployed in 1997. Over 140 source selection teams have utilized DecisionPoint as of December 2000. Two of its key features are that it produces secure, comprehensive, high-integrity documentation, and it facilitates the group collaboration process. These features squarely address the SWDIV Best Value Source Selection process pathologies identified by this research and are integral to the successful implementation of the redesigned process.

DecisionPoint provides the TEB/SSB Chairperson with a "desktop dashboard" feature for managing the source selection. It offers real-time progress reviews, document QA reviews, control over user access and protocols, and enhanced communication via internal messaging and bulletin board capability. These features provide management with the tools to perform real-time status checking and progress updates.

DecisionPoint assists the TEB/SSB Chairperson's ability to manage, collect, and consolidate the volumes of source selection material by providing a data warehouse that is easily queried and simple to enhance. The warehouse's features include workflow logic and standard templates to ensure consistent formatting of the individual evaluator

ratings and narratives, and allows for on-line offeror proposals to be securely posted to the site, providing "cut and paste" capability directly into the evaluations. These features help the TEB/SSB Chairperson to manage the evaluators, and help the evaluators to more easily and consistently produce their individual evaluations.

All of these features are available to any board member anywhere that Web access is available, thus allowing for "virtual" TEB/SSBs. The data is secured with 128-bit Secure Socket Layer (SSL) encryption technology. This is the same technology that on-line banking and financial institutions use. This feature ensures that the security requirements mandated by regulation and by the SWDIV SSP Model are not compromised.

The biggest weakness in the DecisionPoint product is cost. While research demonstrates that this type of KBS technology generally results in large savings in process cycle time and cost, it is not an inexpensive application. (Nissen, 1997) There are mandatory installation, training, support, and maintenance costs that could prove prohibitive for an activity that performs the relatively small number of Best Value Source Selections per year that SWDIV does. Nonetheless, the DecisionPoint product appears to meet all of the performance criteria necessitated by implementing the redesigned process. It addresses the pathologies that are identified in the SWDIV source selection process by this research, and is currently available in the commercial marketplace. Because it is Web-based, there is very little start-up time, and the bulk of the work is performed on the IDS servers in Virginia. Therefore, no client PC hardware or software upgrades are necessary to implement this IT solution.

Given the objectives, scope, and limitations of this research, the DecisionPoint IT solution is the primary recommendation of this thesis. (Note: A free demonstration of this IT solution is available at http://www.acqcenter.com/ai. The user id is "manager" and the password is "123.")

2. Internal Government Product

The second potential IT solution recommended by this thesis is to expand upon a pre-existing, internal government application called the Source Selection Evaluation

System (SSES). The SSES has been developed by a government employee and is based on Microsoft® Access 97. In its current form, the database on which it is based is configured for a specific Best Value Source Selection solicitation and is not able to be utilized as a general tool without further development. However, should a decision be made to go forward with this particular recommendation, the programmer believes that they would be able to reprogram the SSES in approximately 40 hours so that it would prompt the user as to the number of evaluators, evaluation sub-factors, and proposers, as well as other variables, and automatically reconfigure the database in accordance with the user's input. This added flexibility, provided in the form of a "wizard," raises the capability of the SSES application to a level very similar to the DecisionPoint product, although not in as "eye pleasing" or intuitive of a package as DecisionPoint.

The SSES is loaded on to a network server, and a shortcut icon is added to the users' desktops. By simply double-clicking on this icon, any user who can access the server can use the application. However, because the SSES is not be Web-based, potential board members who do not have an account within the SWDIV network are not be able to access the application due to firewall issues.

Another potential concern is that the SSES does not offer the level of security that the DecisionPoint product offers. While the application does have password protection built into it, it is based on the Microsoft® Access database security model, which does not possess a high level of security. However, because the SSES application does not reside on a Web server, and would only be accessible to government employees, it is reasonable to assume that a lack of high level of security is not a fatal flaw.

Advantages of using an internally developed application are many. First, it is essentially a "free" application. Once it is written, it requires very little system administration attention, and it is easily repairable and supportable internally. Second, there are no licensing concerns or limitations. Third, the application and its report output can be tailored specifically to SWDIV policies and desires. Fourth, if for some reason the gains envisioned by this research are not realized by employing this IT solution, its use is easily terminated, with virtually no loss of resources or investment.

Given the powerful workload management and data warehouse capabilities of the DecisionPoint tool, as well as its nearly infinite Web-based collaboration potential, the SSES application is the second most desirable IT solution. However, given further, detailed cost/benefit analysis, its cost advantages may ultimately outweigh the DecisionPoint performance advantages.

3. Preliminary Results from Implementation

Only one Best Value Source Selection has been completed at SWDIV utilizing one of these IT solutions at the time this research was concluded. The internally written, Microsoft® Access-based SSES application has been used from the inception of a Best Value Source Selection acquisition process. While no formal metrics have been collected, it is the clear and resounding consensus of all of the source selection participants that this acquisition process is quicker, better documented, easier, less labor-intensive, and just as secure as any other Best Value Source Selection the SSB members have collectively experienced. Also, it is unanimously felt that the final product, the SSB Board Report, is a highly accurate and clear representation of the consensus opinion of the board. Much of the success and timely execution of this acquisition is directly attributable to the SSES IT tool.

4. Research Questions

A primary and five secondary research questions are posed at the beginning of this thesis. These research questions, which are provided below, are answered in detail throughout this thesis; however, a brief answer is provided here to summarize the findings of this research.

a. Primary

How can the Best Value Source Selection process be innovated to dramatically improve performance?

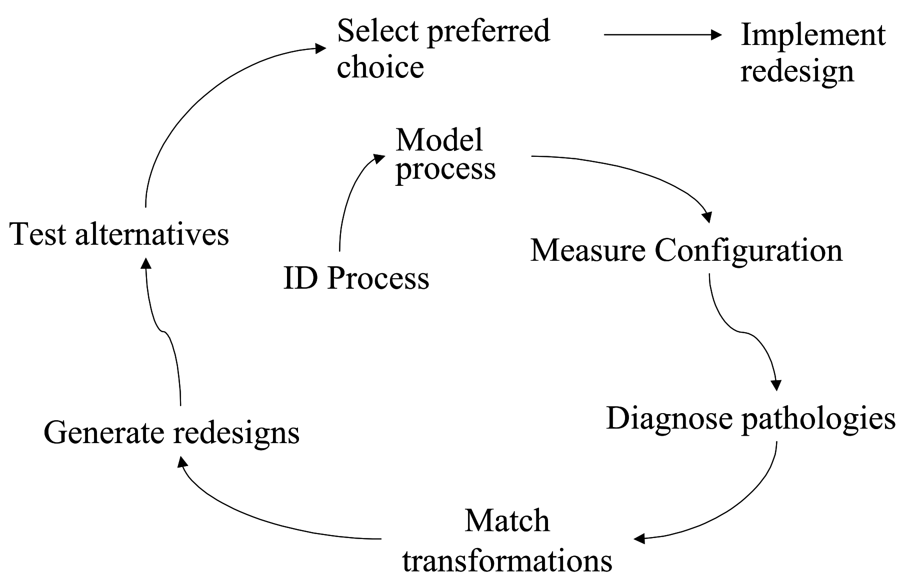
A redesigned Best Value Source Selection process model is provided that results from the application of Davenport's Process Innovation Framework. (Davenport, 1993) Information Technology is selectively applied as an enabler of the innovation. The resulting

redesigned process is anticipated to deliver quantum-level performance improvements, in terms of cycle time and cost, relative to the current process.

b. Secondary

(1) What are the key principles of Innovation?

Process innovation is defined as combining "the adoption of a process view of the business with the application of innovation of key processes." (Davenport, 1993, pg. 1) Process innovation means to "perform a work activity in a radically new way." (Davenport, 1993, pg. 10) True innovation is a process, not a final state. The key principles of innovation and process redesign are illustrated in the diagram below. Once it is fully implemented, the resulting innovated process should deliver quantum-level performance improvements relative to the current process.



(2) How does the Best Value Source Selection process currently function, and what pathologies or other shortcomings presently exist?

The current Best Value Source Selection process functions with several structural pathologies. The current process is highly sequential, there is a high degree of process friction due to the number of handoffs and feedback loops, and there is minimal IT support, communication, or automation.

(3) What constraints are imposed on Best Value Source Selection by the current technology, the organization, by human factors and by regulation?

The constraints imposed on the current Best Value Source Selection process include cost, existing legacy systems and processes, security, and human fear of change.

(4) How can the implementation of change enablers achieve dramatic improvements in contemporary measures, such as cost, quality, and speed?

Selected case studies demonstrate that, through the selected use of change enablers, such as information technology, dramatic improvements in contemporary measures such as cost, quality, and speed can be realized. In the specific case of the Best Value Source Selection process redesign, dramatic improvements in these measures are a direct result of IT change enablers. Information technology allows for increased process parallelism, reduced process friction, and dramatically improved IT support, communication, and automation.

(5) How can the results of this study be generalized for application to other processes?

Because the Best Value Source Selection process is primarily governed by the FAR and DFARS, and is thus similar across most DoD acquisition organizations, the results of this study may be generalized for application across other DoD acquisition organizations with few changes to the proposed redesigned process. Also, because many of the tasks performed in the Best Value Source Selection process are inherent to other acquisition processes, it is reasonable to believe that many of the results of this study may be generalized for application to other acquisition processes within the DoD.

D. POTENTIAL AREAS FOR FURTHER RESEARCH

The focus of this thesis is on reengineering Best Value Source Selection at SWDIV through process innovation and the selected application of information technology. This top-down approach, utilizing Davenport's PIF, identified an overall strategy, at the macro-level, to redesign the Best Value Source Selection process. (Davenport, 1993) However, some micro-level issues are identified as a result of this study that may benefit from further research. Some potential areas identified for future research include:

1. Installation of both the updated, internal SSES application and the DecisionPoint tool at SWDIV. These would be used to execute real-world Best Value Source Selection acquisitions. Metrics should be developed to measure the true cycle time and cost reductions, and a detailed cost/benefit analysis should be performed for each solution.
2. Continued innovation exploration is required. This thesis identifies and discusses one of many potential redesign alternatives available to produce quantum-level improvements in procurement process performance. Further

study is required to investigate and identify other innovations that may be suited for the Best Value Source Selection process. Davenport's methodology may be used to facilitate the overall innovation effort.

3. Further research is required to fully develop a migration plan and implementation strategy for the innovative redesign alternative. Care must be taken in choosing test sites and in formulating implementation schedules to ensure that the initiative has the greatest potential for success. A phased approach to implementation may result in the most efficient and least disruptive migration to the new, redesigned process.
4. Further study is required to estimate the total cost of this process redesign initiative. In order to develop an accurate cost estimate, the additional infrastructure, hardware, software, maintenance, and training required to fully implement the redesigned process and IT solution must be identified and valued to determine the true cost of this solution.
5. Further research is required to identify additional short-term improvements for the Best Value Source Selection process at SWDIV. Short-term improvements will benefit the acquisition community in two major areas. The most obvious benefit from short-term improvements is reduced cycle time. A second benefit is that by gradually exposing the acquisition workforce to change, cultural resistance may lessen by the time the new process is fully implemented. Short-term improvements provide an opportunity to dry-run some of the changes envisioned in the process redesign prior to full implementation.
6. Additional studies are required to identify additional areas within the regulations and statutes, which warrant attention for potential reductions in cycle time. One area that deserves further examination is the mandatory time periods required for a solicitation to be advertised. Advancements in IT have allowed information to be posted and accessed through the Internet nearly instantaneously. A fifteen-day waiting period for a synopsis and 30 additional

days for a solicitation to be advertised may be longer than necessary in today's Internet-enabled marketplace. A reduction in the amount of time a solicitation must remain open may have a relatively large impact on overall Best Value Source Selection process cycle time. Changes in the regulations to reduce the mandatory waiting periods for synopses and solicitations to remain open could be incorporated into the process redesign model, resulting in a corresponding reduction in cycle time.

7. A reevaluation of the Best Value Source Selection process redesign should be conducted focusing on information flows rather than the more traditional activity flows. (Kock, 2001) Today, most of what flows in business processes is information. Paradoxically, however, most of today's business process redesign practices focus on the analysis of business processes as a set of interrelated activities, and pay little attention to the analysis of the information flow in business processes. (Kock, 2001, pg. 96) According to Kock, business process redesign approaches that focus on the flow of information will be more effective and thus preferred by practitioners over those based on the traditional activity-flow view of the process. (Kock, 2001, pg. 96) This is a relatively new concept in the business process redesign field of study, and should be applied to the Best Value Source Selection process to see if any major differences surface as a result of applying this new process redesign framework.
8. A more detailed, statistically controlled survey of SWDIV contract specialists should be conducted to gain further insight into several of the responses noted in this thesis. At a minimum, the survey should include more specific questions regarding the life-cycle cost of products or services acquired via Best Value Source Selections, and the perceived adequacies of the tools that are currently available for performing Best Value Source Selections at SWDIV.

9. Conduct a site visit to an organization that has successfully implemented a KBS for document composition and develop a case study of the results.
10. Attention should be given to the five traditional approaches to process improvement highlighted by Davenport: activity-based costing, process value analysis, business process improvement, information engineering, and business process innovation. (Davenport, 1993, pg. 142) None of these traditional process improvement approaches are likely to yield radical business process innovation. (Davenport, 1993, pp. 150-151) However, these innovation approaches can appropriately be used to complement the components of innovation. These traditional approaches to process improvement require detailed information of the existing process. For example, activity-based costing (ABC) requires an analysis of the organization down to the lowest level of activity across the entire organization. Opportunities for process improvement arise from a detailed analysis of the current process operations, and problems are documented during the course of understanding the process activities. It is this level of scrutiny that gives rise to opportunities for streamlining and rationalization. (Davenport, 1993, pg. 144).

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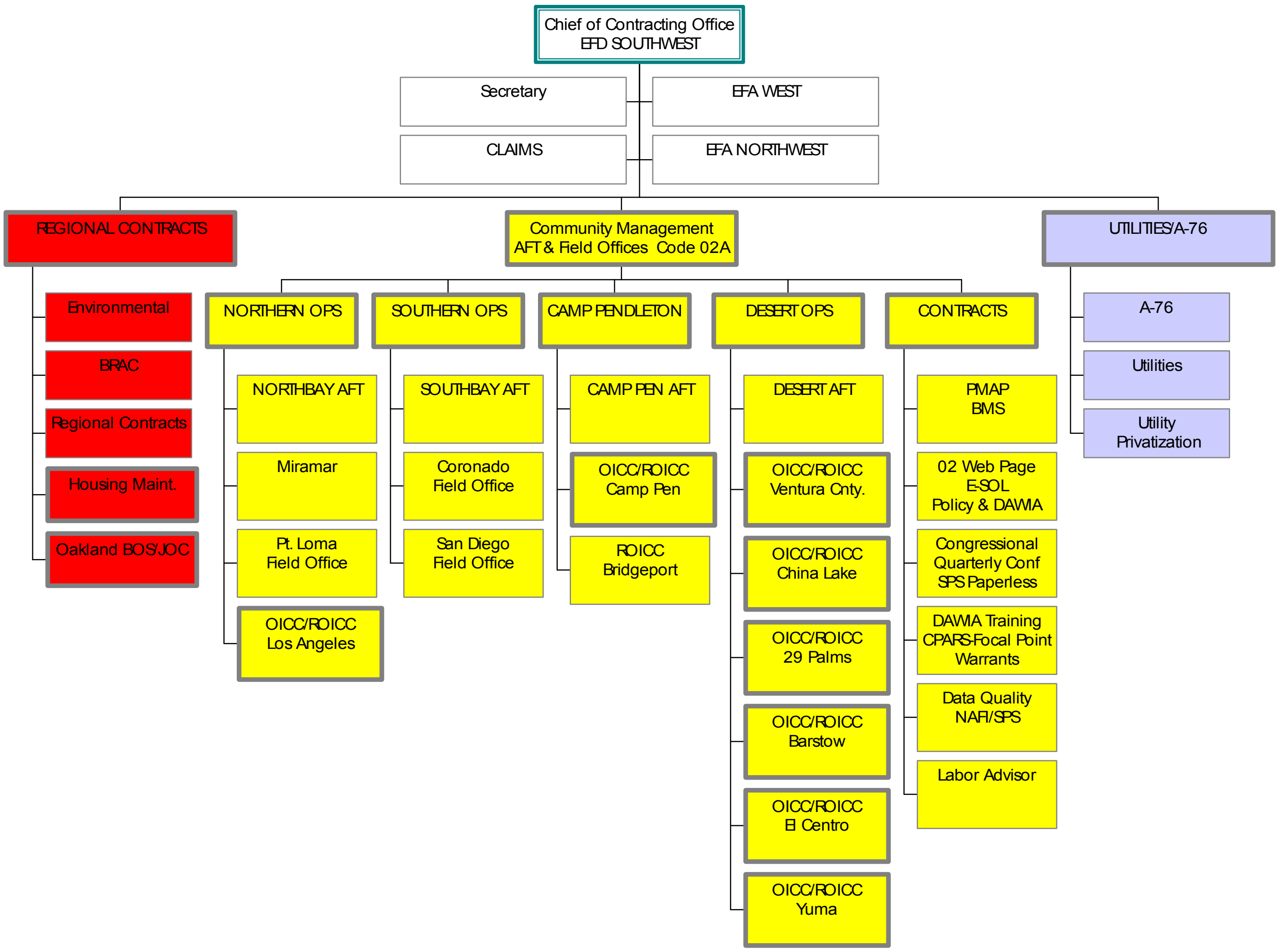
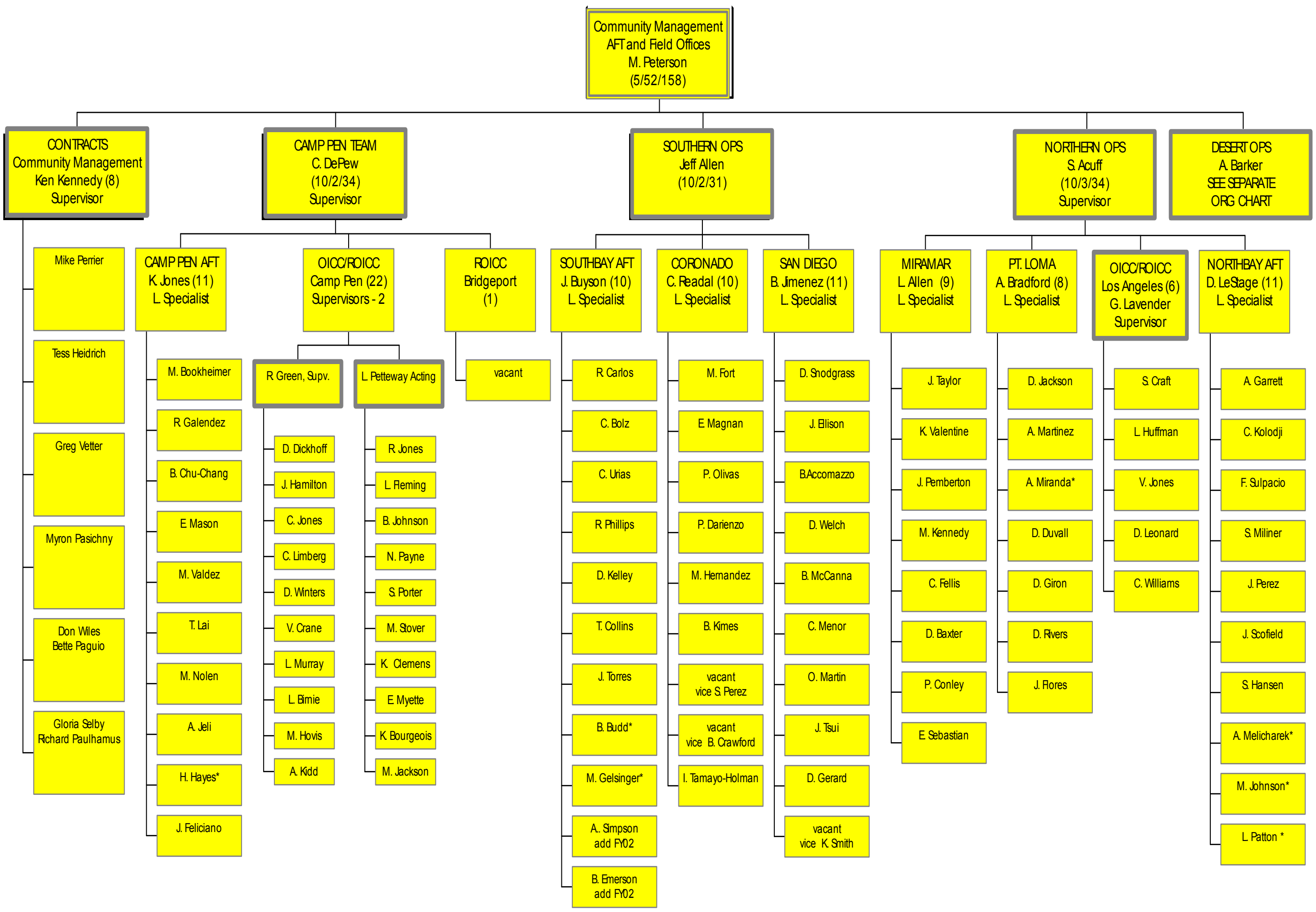
APPENDIX A. SWDIV ORGANIZATIONAL CHARTS

NAVFAC SOUTHWEST DIVISION CONTRACTING ORGANIZATION



AFT and FIELD OFFICE TEAMS



APPENDIX B. CONTRACT SPECIALIST SURVEY FORM

1. How would you describe your level of Best Value Source Selection Experience? (Please mark on the continuum below.)

   ←---→
   Lots Average Little

2. What percentage of work do you/does your team have that is procured via source selection methods?

   ____________ (0-100%)

3. Do you generally see source selection as ____ quicker or ____ slower than an IFB?

4. In your experience, does a source selection acquisition generally result in a ____ better or ____ worse product/service?

5. In your experience, does a source selection acquisition generally result in a ____ more or ____ less expensive product/service than with an IFB (given total life-cycle cost)?

6. Are the tools you currently have available to perform source selection acquisitions ____ not adequate ____ adequate ____ more than adequate?

7. What do you see/perceive to be the greatest strengths/positives and weaknesses/negatives of the source selection process?

   ____
   Strengths/Positives

   ____
   Weaknesses/Negatives

   (If more space is required, please continue your comments below.)

8. What about the Best Value Source Selection process would you most like to change?

   ____

9. In your opinion, is your team appropriately staffed to perform the number of Best Value Source Selections you are required to execute? _____ Yes _____ No _____ No opinion

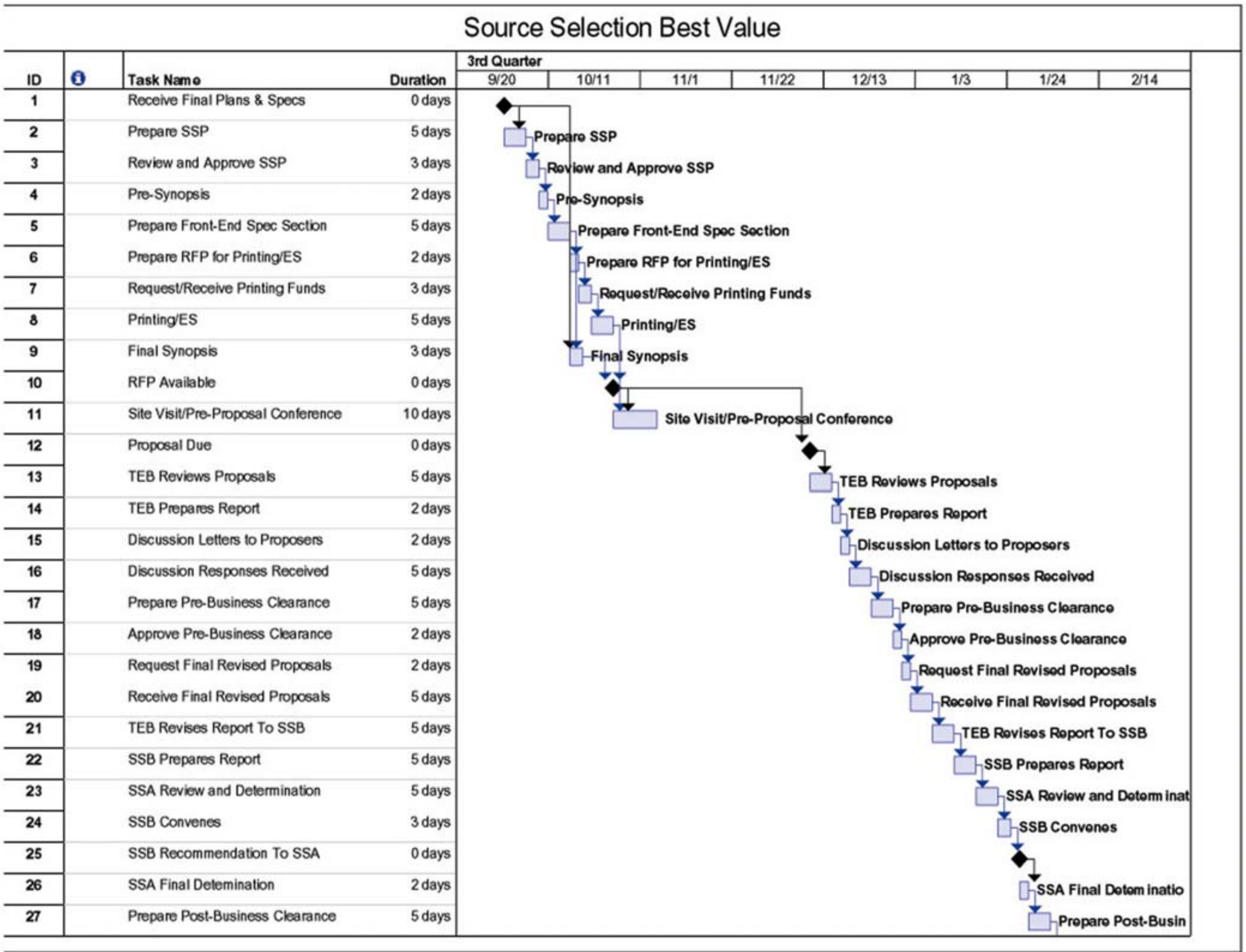
10. Based on your experience, do Source Selection Board members generally have to travel to participate in the Source Selection Board? ____ Never ____ Sometimes _____ Often ____ Always

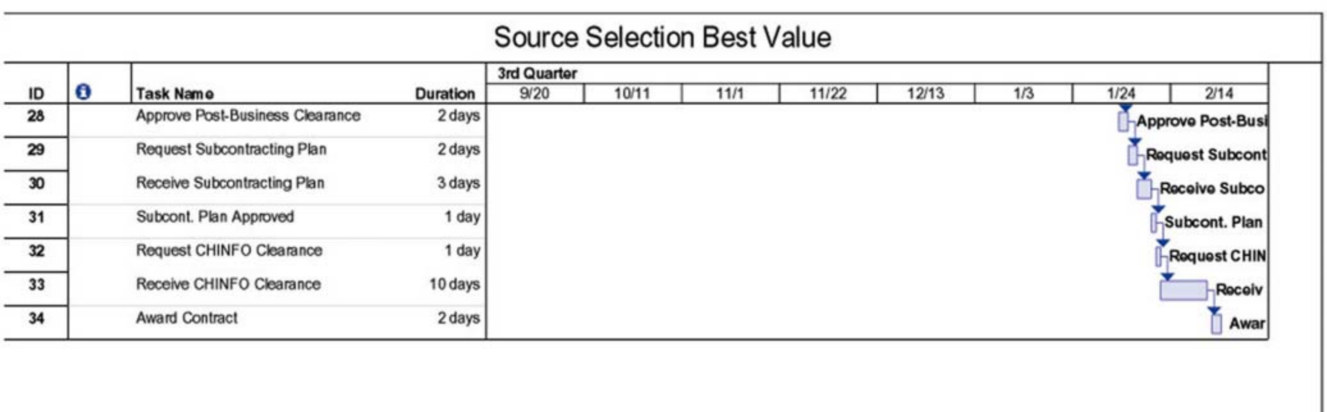
11. What role do you typically play in the source selection process?

    ____ SSA ____PCO ____TEB Board Member ____SSB Board Member
    ____Other (If other, please indicate what role)

    ____

APPENDIX C. CURRENT BEST VALUE SOURCE SELECTION PROCESS: GANTT CHART





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APPENDIX D. CURRENT BEST VALUE SOURCE SELECTION PROCESS: TASKS, DURATIONS, START, FINISH, PREDECESSORS, and AGENT ROLES

Task No.	Task Name	Duration of Task	Start Task	Finish Task	Predecessors	Agent Role
1	Receive Final Plans & Specs	0 days	10/1/1998 8:00	10/1/1998 8:00	N/A	Project Lead, Contract Specialist
2	Prepare Source Selection Plan (SSP)	5 days	10/1/1998 8:00	10/5/1998 17:00	1	Project Lead, Contract Specialist
3	Review and Approve SSP	3 days	10/6/1998 8:00	10/8/1998 17:00	2	Technical Reviewers, Contract Specialist
4	Pre-Synopsis	2 days	10/9/1998 8:00	10/10/1998 17:00	3	Operations Assistant, Contract Specialist
5	Prepare Front-End Spec. Section	5 days	10/11/1998 8:00	10/15/1998 17:00	4	Operations Assistant, Contract Specialist, Project Lead
6	Prepare RFP for Printing	2 days	10/16/1998 8:00	10/17/1998 17:00	5	Operations Assistant
7	Request/Receive Printing Funds	3 days	10/18/1998 8:00	10/20/1998 17:00	6	Operations Assistant, Project Lead
8	Printing	5 days	10/21/1998 8:00	10/25/1998 17:00	7	Defense Automated Printing Service (DAPS)
9	Final Synopsis	3 days	10/16/1998 8:00	10/18/1998 17:00	1,5	Operations Assistant, Contract Specialist
10	RFP Available	0 days	10/25/1998 17:00	10/25/1998 17:00	8,9	N/A (Point Event)
11	Site Visit/Pre-Proposal Conference	10 days	10/26/1998 8:00	11/4/1998 17:00	8,10	Project Lead, Contract Specialist
12	Proposal Due	0 days	12/9/1998 17:00	12/9/1998 17:00	10FS+45 days	Operations Assistant
13	TEB Reviews Proposals	5 days	12/10/1998 8:00	12/14/1998 17:00	12	Technical Reviewers
14	TEB Prepares Report	2 days	12/15/1998 8:00	12/16/1998 17:00	13	Operations Assistant, Project Lead, Contract Specialist
15	Discussion Letters to Proposers	2 days	12/17/1998 8:00	12/18/1998 17:00	14	Operations Assistant, Project Lead, Contract Specialist
16	Discussion Responses Received	5 days	12/19/1998 8:00	12/23/1998 17:00	15	Operations Assistant
17	Prepare Pre-Business Clearance	5 days	12/24/1998 8:00	12/28/1998 17:00	16	Operations Assistant, Contract Specialist, Project Lead
18	Approve Pre-Business Clearance	2 days	12/29/1998 8:00	12/30/1998 17:00	17	Contract Specialist
19	Request Final Revised Proposals	2 days	12/31/1998 8:00	1/1/1999 17:00	18	Operations Assistant, Contract Specialist, Project Lead
20	Receive Final Revised Proposals	5 days	1/2/1999 8:00	1/6/1999 17:00	19	Operations Assistant
21	TEB Revises Report to SSB	5 days	1/7/1999 8:00	1/11/1999 17:00	20	Technical Reviewers
22	SSB Prepares Report	5 days	1/12/1999 8:00	1/16/1999 17:00	21	Project Lead, Contract Specialist
23	SSA Review and Determination	5 days	1/17/1999 8:00	1/21/1999 17:00	22	Contract Specialist/SSA
24	SSB Convenes	3 days	1/22/1999 8:00	1/24/1999 17:00	23	Contract Specialist, Project Lead
25	SSB Recommendation to SSA	0 days	1/26/1999 17:00	1/26/1999 17:00	24FS+2 edays	Contract Specialist, Project Lead
26	SSA Final Determination	2 days	1/27/1999 8:00	1/28/1999 17:00	25	Contract Specialist/SSA
27	Prepare Post-Business Clearance	5 days	1/29/1999 8:00	2/2/1999 17:00	26	Contract Specialist
28	Approve Post-Business Clearance	2 days	2/3/1999 8:00	2/4/1999 17:00	27	Contract Specialist
29	Request Subcontracting Plan	2 days	2/5/1999 8:00	2/6/1999 17:00	28	Contract Specialist
30	Receive Subcontracting Plan	3 days	2/7/1999 8:00	2/9/1999 17:00	29	Operations Assistant
31	Subcont. Plan Approved	1 day	2/10/1999 8:00	2/10/1999 17:00	30	Contract Specialist
32	Request CHINFO Clearance	1 day	2/11/1999 8:00	2/11/1999 17:00	31	Contract Specialist
33	Receive CHINFO Clearance	10 days	2/12/1999 8:00	2/21/1999 17:00	32	Operations Assistant
34	Award Contract	2 days	2/23/1999 8:00	2/24/1999 17:00	33FS+1 day	Operations Assistant, Contract Specialist

TOTAL TASKS: 34 **TOTAL DAYS START-FINISH: 146**

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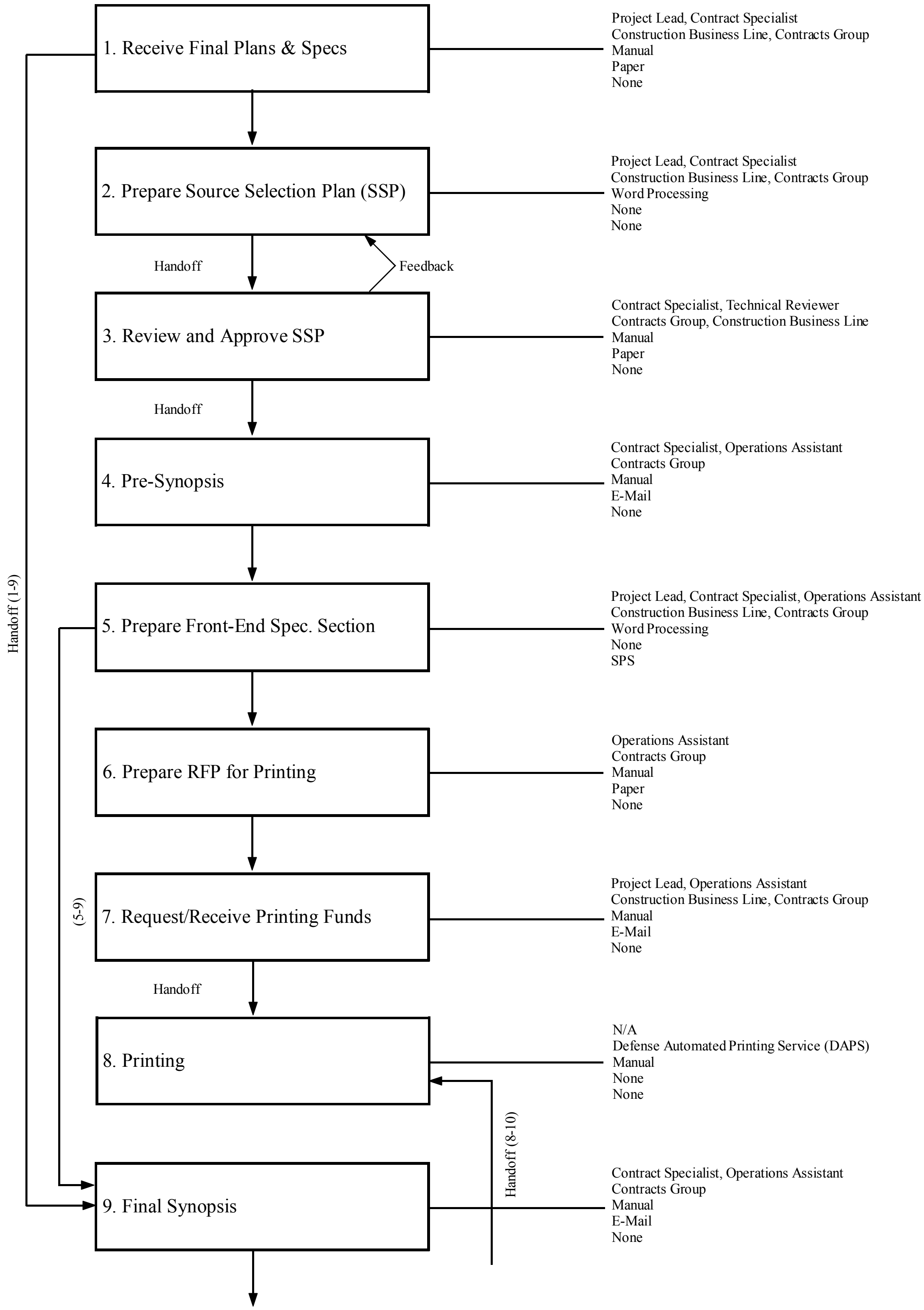
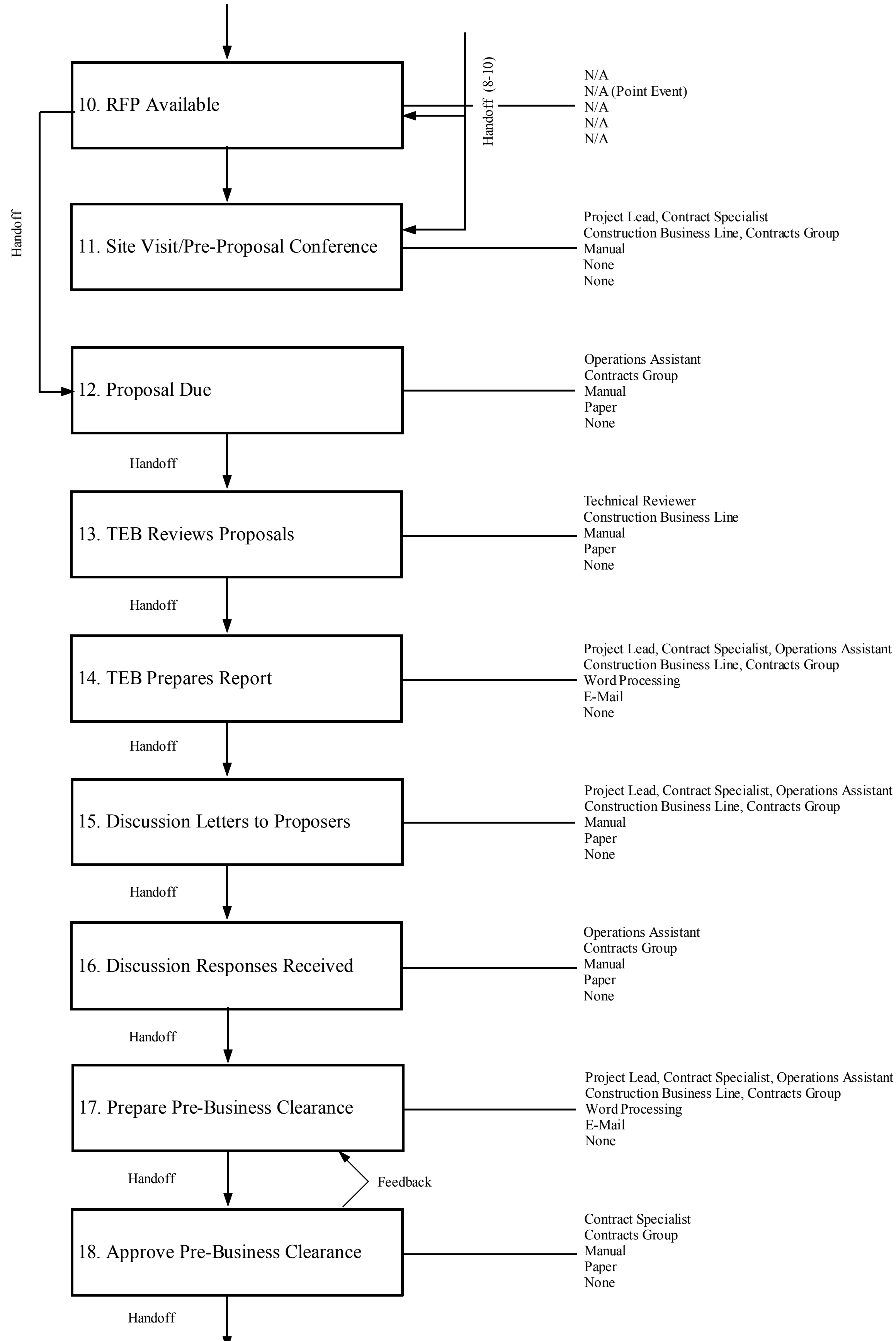
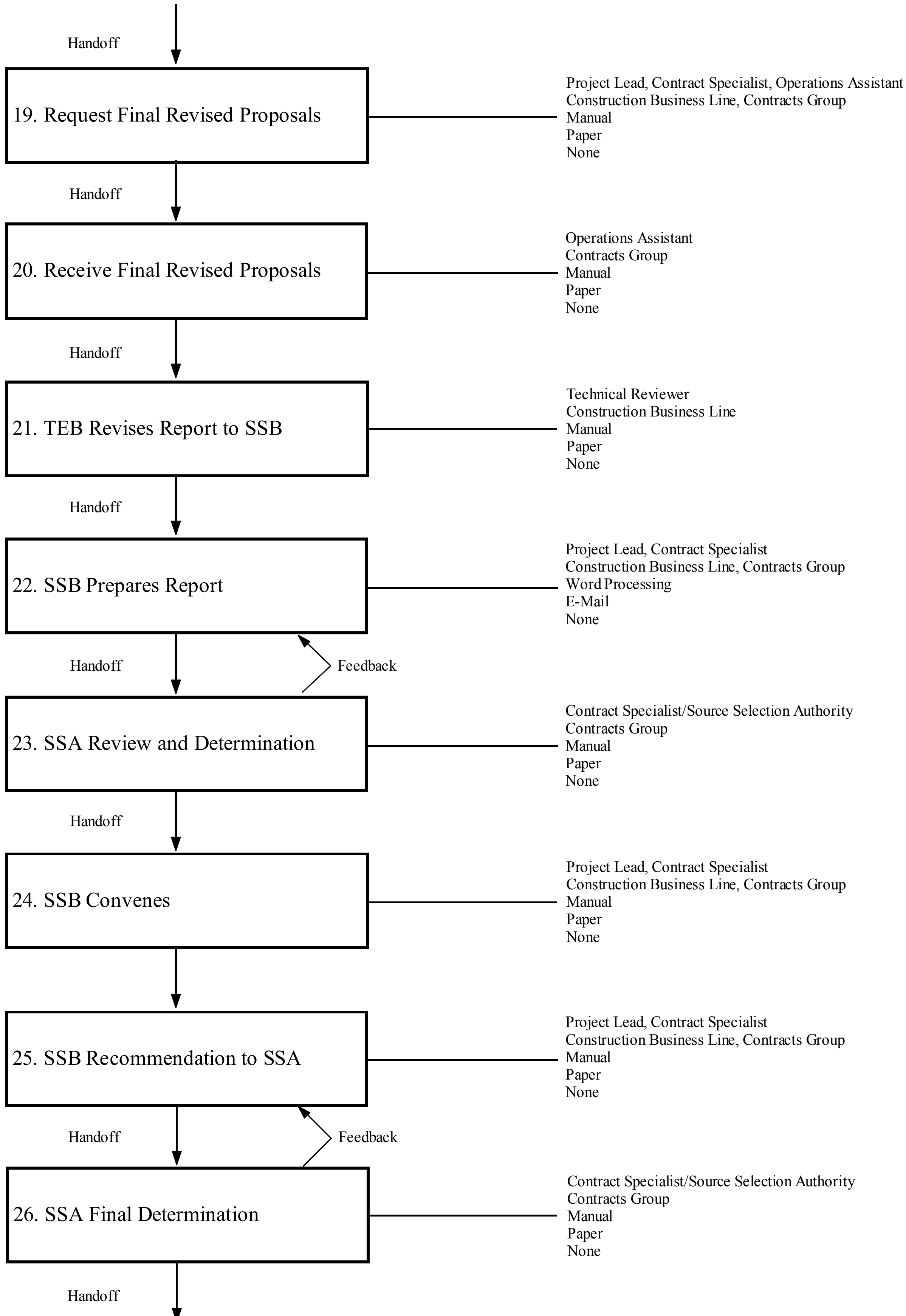
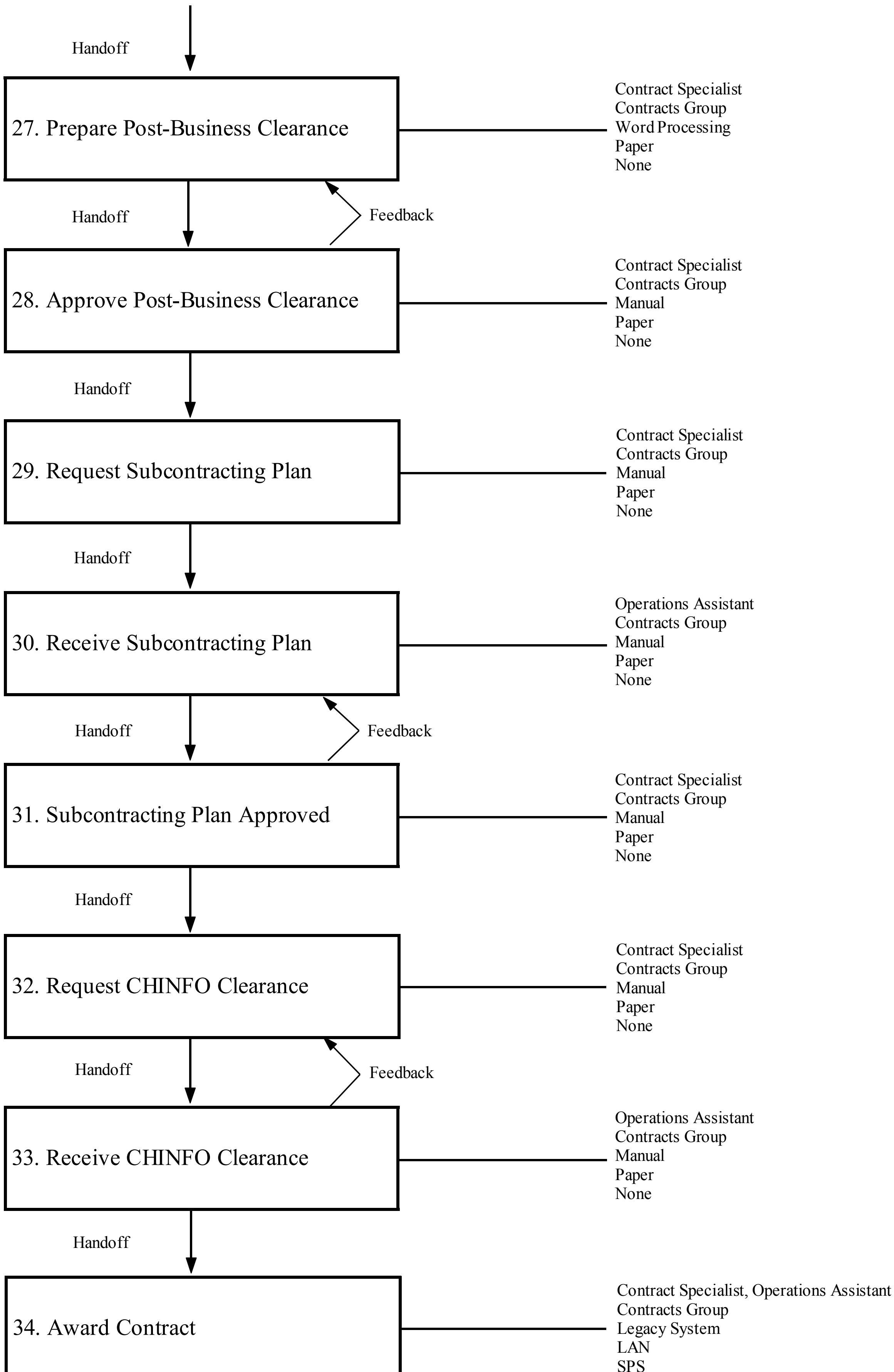
APPENDIX E. CURRENT BEST VALUE SOURCE SELECTION PROCESS: KOPeR MODEL FORMAT




10. RFP Available
Handoff (8-10)
N/A
N/A (Point Event)
N/A
N/A
N/A
Handoff
11. Site Visit/Pre-Proposal Conference
Project Lead, Contract Specialist
Construction Business Line, Contracts Group
Manual
None
None
12. Proposal Due
Operations Assistant
Contracts Group
Manual
Paper
None
Handoff
13. TEB Reviews Proposals
Technical Reviewer
Construction Business Line
Manual
Paper
None
Handoff
14. TEB Prepares Report
Project Lead, Contract Specialist, Operations Assistant
Construction Business Line, Contracts Group
Word Processing
E-Mail
None
Handoff
15. Discussion Letters to Proposers
Project Lead, Contract Specialist, Operations Assistant
Construction Business Line, Contracts Group
Manual
Paper
None
Handoff
16. Discussion Responses Received
Operations Assistant
Contracts Group
Manual
Paper
None
Handoff
17. Prepare Pre-Business Clearance
Project Lead, Contract Specialist, Operations Assistant
Construction Business Line, Contracts Group
Word Processing
E-Mail
None
Handoff
Feedback
18. Approve Pre-Business Clearance
Contract Specialist
Contracts Group
Manual
Paper
None
Handoff



Handoff
19. Request Final Revised Proposals
Project Lead, Contract Specialist, Operations Assistant
Construction Business Line, Contracts Group
Manual
Paper
None
Handoff
20. Receive Final Revised Proposals
Operations Assistant
Contracts Group
Manual
Paper
None
Handoff
21. TEB Revises Report to SSB
Technical Reviewer
Construction Business Line
Manual
Paper
None
Handoff
22. SSB Prepares Report
Project Lead, Contract Specialist
Construction Business Line, Contracts Group
Word Processing
E-Mail
None
Handoff
Feedback
23. SSA Review and Determination
Contract Specialist/Source Selection Authority
Contracts Group
Manual
Paper
None
Handoff
24. SSB Convenes
Project Lead, Contract Specialist
Construction Business Line, Contracts Group
Manual
Paper
None
25. SSB Recommendation to SSA
Project Lead, Contract Specialist
Construction Business Line, Contracts Group
Manual
Paper
None
Handoff
Feedback
26. SSA Final Determination
Contract Specialist/Source Selection Authority
Contracts Group
Manual
Paper
None
Handoff


Handoff
27. Prepare Post-Business Clearance
Contract Specialist
Contracts Group
Word Processing
Paper
None
Handoff
Feedback
28. Approve Post-Business Clearance
Contract Specialist
Contracts Group
Manual
Paper
None
Handoff
29. Request Subcontracting Plan
Contract Specialist
Contracts Group
Manual
Paper
None
Handoff
30. Receive Subcontracting Plan
Operations Assistant
Contracts Group
Manual
Paper
None
Handoff
Feedback
31. Subcontracting Plan Approved
Contract Specialist
Contracts Group
Manual
Paper
None
Handoff
32. Request CHINFO Clearance
Contract Specialist
Contracts Group
Manual
Paper
None
Handoff
Feedback
33. Receive CHINFO Clearance
Operations Assistant
Contracts Group
Manual
Paper
None
Handoff
34. Award Contract
Contract Specialist, Operations Assistant
Contracts Group
Legacy System
LAN
SPS

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